TITLE OF THE INVENTION

PORTABLE TERMINAL

FIELD OF THE INVENTION

This invention relates to a portable terminal, such as, for example, a portable telephone, PHS, PDA (Personal Digital Assistant), PCS (Personal Communication Service), PC (Personal Computer) and ~~so on~~on the like.

BACKGROUND OF THE INVENTION

In ~~these~~recent years, ~~in~~ a foldable portable terminal,~~ such a terminal that~~ has been developed, in which, in addition to an LCD (main liquid crystal) which ~~was~~is formed on a front surface of ~~a~~the housing, an LCD (sub liquid crystal), which is usable even in a folded state, is ~~was~~ formed on ~~a~~the back surface thereof~~ has been developed~~. ~~In addition, the~~ The front surface of the portable terminal is a surface which is exposed ~~in a state that a~~when the foldable portable telephone ~~was~~is ~~opened~~ state, and the back surface thereof is a surface which is exposed when the portable terminal is in ~~a~~the folded state (closed state), ~~and~~being a surface ~~of a back~~on the opposite side ~~of~~from the front surface.

As ~~suchlike~~publicly known examples of a foldable portable terminal, JP-A-2000-253113 gazette and JP-A-2002-111816 gazette can be cited.

~~In the~~ JP-A-2000-253113 gazette~~,~~ discloses~~d is such~~ terminal a structure ~~that~~in which, in addition to the main liquid crystal display which ~~was~~is formed on the front

surface of the terminal device, a see-through liquid crystal display is disposed in an other housing, ~~and~~ so that, even when the portable terminal is in a folded state, information displayed on the main liquid crystal ~~is~~ display can be viewed through the see-through liquid crystal display. Also, in order to realize a predetermined operation when the portable terminal is in a folded state, ~~disclosed is such a structure that~~ a shutter key, a mode switching key, and a menu key ~~were~~ are disposed on the housing.

Also, in the portable telephone disclosed in JP-A-2002-111816 gazette, in order to enable an audio operation when the portable telephone is in the folded state, ~~disclosed is a~~ the portable telephone ~~in which, disposed was~~ has an operation key that is disposed so as to be usable when the portable telephone is in a folded state along with the sub liquid crystal display.

On ~~one~~ the other hand, ~~in a~~ JP-A-2001-186396 gazette~~,~~ disclosed~~s is~~ a terminal structure in which ~~is not one wherein~~ liquid crystal display parts ~~were~~ are formed on both ~~surfaces of~~ a front surface and a back surface of the portable terminal, but~~, which~~ only a main liquid crystal display is provided on the front surface. Thus, in order to make it ~~usable even in such a state that~~ possible to view the main liquid crystal display formed on the front surface ~~was~~ even when the portable terminal is folded, ~~enabled folding~~ the housings are hinged so as to be foldable also toward an opposite side to ~~a~~ the normally folded side ~~so as for~~ to allow the main liquid crystal display to be exposed even when the terminal is in the folded state.

In the same manner, ~~in a~~ JP-A-2001-320463 gazette~~,~~ disclosed~~s is~~ a structure in which ~~makes the main it usable by having~~ the main liquid crystal display is exposed ~~in~~ even when the portable terminal is in the folded state, by ~~folding after~~ effecting 180

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degree rotation of the housing thereof around a hinge part ~~rotating~~ in the horizontal direction ~~the housing~~, on the front surface of which, the main liquid crystal ~~was~~ display panel is formed~~, against a hinge part~~.

SUMMARY OF THE INVENTION

However, in the portable terminal disclosed in JP-A-2000-253113 gazette, ~~there is such a disclosure that~~ a predetermined function can be utilized when the terminal is in a folded state, but as to keys which ~~were~~ are formed on the back surface thereof, such as the shutter key, the mode switching key and so on, these keys are disposed in a mixed manner, ~~and~~ so that the usability of a camera operation when the portable terminal is in a closed state has not been studied sufficiently. For example, in case of operating the shutter key, there ~~was~~ is a possibility that the mode switching key ~~is~~ will be mistakenly operated. Also, the mode switching key is a key which is not necessary to be operated in the middle of the camera operation~~,~~; and so, because of the existence of ~~the~~ such~~like~~ key, it is necessary for a ~~use~~ user to remember too much, or to make too many judgments ~~too much~~, as to which key is for which function, ~~and it could not be said that~~ whereby the usability is not sufficient.

Also, in the portable terminal disclosed in JP-A-2002-111816 gazette, ~~disclosed is simply one by which~~ a user can listen to music ~~data~~ and so on when the portable terminal is in the closed state, ~~and~~ but there is no description regarding a camera operation in the closed state, and studies of ~~an~~ the arrangement and usability of operation keys at the time of ~~the~~ camera operation and so on were not sufficient.

Also, ~~in the~~ JP-A-2001-186396 gazette and ~~the~~ JP-A-2001-320463 gazette~~,~~ both

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~~of them~~ disclose a structure which is usable in ~~such~~ a state ~~that~~ in which the main liquid

crystal display formed on the front surface is exposed when the portable terminal is in

the folded state, but this simply relates to the use of the main liquid crystal display and

does not relate to ~~the~~a sub liquid crystal display which ~~was~~ is formed on the back

surface. Also, in the case of these portable terminals, in order to have the main liquid

crystal exposed, unlike ~~a~~the folded state ~~in case of~~in which the portable terminal is

normally ~~carrying~~ carried around (the folded (closed) state in this embodiment), there

was a necessity to take the trouble to have the housing reversed or rotated.

In this manner, in any one of publicly known examples, a sufficient study has not

been carried out as to the usability of the camera operation when the portable terminal

is in the closed state, in ~~the~~ a foldable portable telephone having display parts on both

the front and back surfaces thereof. In particular, a sufficient study ~~was~~ has not been

conducted as to ~~a~~the key layout with good usability in case of operating a camera by

gripping a portable telephone ~~with~~ in the closed state in such a manner that the hinge

part is ~~in~~at an upper side.

Also, a sufficient study ~~was~~ has not been conducted as to the usability of the

portable terminal on the occasion ~~that~~ when it ~~was~~ is changed from a closed state to an

open~~ed~~ state, or from ~~the~~an open~~ed~~ state to the closed state.

Also, in any one of the publicly known examples, a sufficient study ~~is~~has not

been conducted as to a structure for preventing a wrong operation ~~and~~which may cause

a malfunction in case ~~that~~ keys ~~were~~ are disposed on the back surface of the portable

terminal.

A first object of this invention is to realize an improvement in the ~~of~~ usability of

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the portable terminal in the folded state, particularly in the case of a foldable portable telephone. In particular, it is an object to improve the usability of the portable terminal at the time of camera operation.

Also, a second object of the invention is to prevent a wrong operation of ~~the~~ an operation key which ~~was~~ is formed on the back surface of the portable terminal.

Also, a third object of the invention is to prevent ~~a~~ malfunction of ~~the~~an operation key which ~~was~~is formed on the back surface of the portable terminal.

The invention may be configured as described in appended claims, in order to accomplish the above-described first to third objects.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention, together with further advantages thereof, may best be understood by reference to the following description, taken in conjunction with the accompanying drawings, in which:

Figs. 1-(1) to 1(4) provide plan and side views showing a first embodiment of ~~is a conspectus view of~~ a portable telephone ~~of a first embodiment~~ in both open and closed states;

Fig. 2 is a ~~structural~~ block diagram of the first embodiment;

Fig. 3 is a process flow chart of the first embodiment;

Fig. 4 is a diagram showing a storage format table of pickup image information as used in the first embodiment;

Fig. 5 is a functional flow diagram which shows an example of a display screen of the first embodiment;

Fig. 6 is a process flow chart of a second embodiment;

Fig. 7 is a functional flow diagram which shows an example of a display screen of the second embodiment;

Fig. 8 is a process flow chart of a third embodiment;

Fig. 9 is a functional flow diagram which shows an example of a display screen of the third embodiment;

Figs. 10(1) is a diagram and Figs. 10(2) to 10(4) are is a process flow chart s of a fourth embodiment;

Fig. 11 is a functional flow diagram which shows an example of a display screen of the fourth embodiment;

Figs. 12(1) and 12(2) are diagrams which shows an example of a layout of a sub operation key 107;

Figs. 13(1) and 13(2) are diagrams is a view showing a an example of the shape of the sub operation key and a cross-section of the terminal unit, and Fig. 13(3) is a cross-sectional view taken along line y-y in Fig. 13(1);

Fig. 14 is a functional flow diagram which shows an example of display screen transition of a sub display part 104 at the time of a normal state other than a camera mode; and

Figs. 15(1) to 15(3) are diagrams of various types of is a view explaining a definition of a back surface or a side surface of a housing.

DETAILED DESCRIPTION OF THE EMBODIMENTS

Hereinafter, various embodiments of this invention will be described by use of

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with reference to the drawings. In addition, in the ~~following~~ drawings, the same

reference numerals are used to indicate and identify the same structural parts.

Figs. 1(1) to 1(4) ~~shows~~ a conspectus view of a portable telephone ~~of~~which

represents this embodiment (first embodiment), and Fig. 2 is a structural block diagram

of the portable telephone according to this embodiment. ~~Also~~More particularly, Fig. 1(1)

shows a front view of the ~~a~~ housing~~, and~~ as it appears when the portable telephone is in

the open state; Fig. 1(2) shows a view of the housing ~~which was viewed~~ in the open

state as seen from a the back surface thereof~~,~~ ~~and~~ Fig. 1(3) shows a side view of the

housing ~~which was viewed from a side surface thereof,~~ as it appears when the portable

telephone is in a folded state; and Fig. 1(4) shows a back view of the housing in ~~a~~ the

folded state~~, respectively~~.

Here, in this embodiment, the illustrated directions of left and right, as well as up

and down, are defined ~~in a state of taking a look at a~~ when viewing the portable terminal

from a front surface thereof, as shown in Fig. 1(1).

———Also, ~~a~~ the front surface of the housing, which configures the portable telephone

in this specification, is defined to be ~~of~~ that surface which is in a range of vision ~~from a~~

~~front surface in such a state that~~ when the portable telephone ~~was~~ is in the opened

state, as shown in Fig. 1(1)~~, and~~; a back surface thereof is defined to be ~~of~~ that surface

which is in a range of vision ~~from a back surface of the front surface in such a state that~~

when the portable telephone ~~was~~ is in the opened state, as shown in Fig. 1(2)~~,~~; and a

side surface thereof is defined to be ~~of~~ that surface which is in a range of vision other

than the above-described ones.

In this regard, however, in a current portable telephone, a streamline shaped

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housing is adopted, and so there are quite a ~~lot~~ large number of portable telephones in which a boundary line between the front surface, the back surface and the side surface is not clear. For example, as shown in Fig. 15(1), in a portable telephone in which a~~the~~ side surface is disposed at approximately 90 degrees to a reference or base surface, by the above-described definitions, it is ~~easily determined that a~~ easy to distinguish between the front surface ~~is of a range of vision from a front surface in such a state that the portable telephone was opened, and a~~ and the back surface, on the one hand ~~is of a range of vision from a back surface of the front surface in such a state that the portable telephone was opened~~, and a~~the~~ side surface ~~is of a range other than the above-described ones~~, on the other hand, in the open state of the portable telephone.

—————However, as shown in Fig. 15(2), when a~~there is no~~ distinct surface which is disposed approximately 90 degrees to the reference surface is not clear, all surfaces can be viewed from the front surface and the back surface, ~~and also~~ so that, a boundary line between the front surface and the back surface is not clear.

In this connection, even in a case as described above, if it ~~was determined~~ is indicated that an operation key ~~which was~~ is disposed so as to straddle a joint part ~~for jointing~~ joining an upper side member and a lower side member of a housing (e.g., an operation key B of Fig. 15(2) ~~etc.~~), even if the operation key can be viewed from the front surface or the back surface, it is deemed to be disposed on the side surface.

Also, as shown in Fig. 15(3), which shows ~~an example of~~ a cross sectional view wherein a housing 200 is cut ~~in a surface~~ along a line x-x parallel to a hinge part 300, as seen in Fig. 1(1), even in the case of an operation key which ~~was~~ can be viewed from a back surface of the housing 200 and is disposed at a position which does not straddle

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the above-described joint part, it ~~was~~ has been determined that, if an angle (α) which is formed by a normal line direction of a located position of the operation key relative to a housing surface and a vertical direction in a grounded state of the portable telephone is 45 degrees and more, ~~it~~ the operation key is deemed to be disposed on a side surface. That is, ~~it was determined that,~~ based ~~depending~~ upon ~~a fact that~~ whether the ~~located~~ position of the operation key is ~~close~~ closer to either ~~of~~ the back surface or the side surface~~, it is judged~~ determines whether it is disposed on the back surface or on the side surface.

On ~~one~~ the other hand, if it is possible to ~~deem~~ consider that the housings 200, 201 ~~are of~~ constitute an approximately 6 face piece, the front surface, the back surface and the side surface may be defined on the basis of ~~the~~ an approximately 6 face piece.

In addition, in each case, in ~~a use~~ the state of use wherein the housing ~~was~~ is being held, for example, whether it is a range ~~of~~ where an operation key is operable by ~~a~~ use of the thumb, or whether it is in a range which ~~is~~ makes it difficult to be mistakenly operated, becomes a standard for determining a boundary line of each surface.

Now, the portable telephone shown in Figs. 1(1) to 1(4) and 2 ~~of this embodiment, by~~ which exhibits an improved usability ~~at the time of being~~ the device is used in the folded ~~was~~ state ~~improved~~, will be described. The portable telephone of this embodiment has two housings 200 and 201, which can be moved to opened and closed states, and an image pickup part, for example, an image pickup camera 109. These housings 200 and 201 are joined so that they ~~of a structure which~~ can be folded around an X-X axis as a turning axis, and, for this purpose, they are connected to each other at a hinge part 300.

The housing 200 has a speaker ~~111~~ 112 which outputs ~~a~~ sound at the time of telephone communication and a main display part 103 which ~~conducts~~ produces a main display~~;~~ and~~,~~ it has, on a back surface ~~of,~~ opposite to the main display part 103, a sub display part 104 which ~~conducts~~ produces a simplified display. There is also ~~and~~ a sub operation key 107 (in Fig. 1(2), 107a and 107b) on the back surface. Here, ~~on~~ the main display part 103~~,~~ display~~ed~~s are not only the operating states, such as ~~a~~ the power state, ~~an~~ the -electromagnetic wave strength, ~~a~~ the power, ~~a~~ the server connection state, unread mails and so on, of the portable telephone, but also received data, such as the telephone number inputted, a mail address, ~~a~~ mail sending text and soon, ~~and~~ as well as a motion picture and a still picture, a telephone number of a caller at the time when an incoming call was received, ~~a~~ received mail text, a screen of Internet connected data and so on. On the other hand, sub display part 104~~,~~ display~~ed~~s ~~are~~ the operating states of the portable telephone~~,~~ and, for example, icons are displayed which show ~~a~~ the power state, ~~an~~ the electromagnetic wave strength, ~~a~~ the power, a server connection state, and unread mail~~s are displayed~~. Also, on the main display part 103 and the sub display part 104, it is possible to display (monitor) information of an image which was picked up by the image pickup camera 109 as a view finder at the time of camera operation.

Also, ~~it~~ the back surface has a music speaker 113, which is used for reproducing a melody for signaling an incoming call, and for playing a music file, such as mp3 etc.

On ~~one~~ the other hand, the housing 201 has a main operation ~~key~~ keyboard 106 by which a main input operation is carried out, ~~and~~ a microphone ~~112~~ 111 through which ~~a~~ sound is inputted, and a side-mounted mode selection key 105 for switching

image pickup modes of the image pick up camera ~~is disposed thereon~~. Here, the main operation key~~board~~ 106 is an input ~~part~~ device used for inputting a telephone number and other information~~;~~ and, when the portable terminal is used as a typical telephone, it is used for inputting the telephone number of the other party, ~~and~~ while in the case of sending ~~a~~ mail etc., character information etc. is inputted through it.

Also, the mode selection key 105 is, for example, a key that is used for switching between modes, such as a motion picture mode for taking a motion picture, a still picture mode for taking a still picture, a setting mode for carrying out various settings for image pickup, a browsing mode for browsing through pictures which ~~ware image~~ were previously -picked up, an edit mode for editing pictures which were ~~image~~ previously picked up, and so on. In addition, in this embodiment, ~~formed is~~ a slide key is provided which is slid in upward and downward directions, although ~~but~~ a dial type key, such as jog dial etc., may be provided as well~~formed~~. In ~~addition~~ this regard, ~~it is configured that~~ the slide key can select the motion picture mode ~~by~~ when being slid in the upward direction for a predetermined period of time, and can select the still picture mode ~~by~~ when being slid in the downward direction for a predetermined period of time.

Referring to Fig. 2, the CPU 110 operates on the basis of a program which ~~was~~ is stored in a memory 102, and it controls each part of the portable telephone in response to an input from the main operation ~~key~~ keyboard 106 and the sub operation keys 107. ~~————~~A power supply part 114 is provided in the form of a battery for driving each component part of the portable telephone.

A fold detection part 108 detects ~~a folding~~ the open or closed state of the portable telephone~~, and~~. In this regard, for example, the housing 200 has a magnet

and the housing 201 has a hall~~-~~effect device, ~~and~~ so that opening and closing states are detected on the basis of a Hi level or a Low level of the voltage value of the hall~~-~~effect device to which magnetic fields ~~were~~ are applied by the magnet. ~~In addition~~On the other hand, the fold detection part 108 may be ~~one~~ a device which ~~made~~ makes use of a sensor or an engagement of a concavity and a convexity, ~~if~~ whereby the opening and closing states can be detected.

Also, ~~disposed~~ is the memory 102 ~~which~~ stores various data, for example, data ~~and so on~~ of motion pictures and still pictures, and the memory 102 is composed of a volatile memory 102a for storing data temporarily and a non-volatile memory 102b for holding a stored state regardless of the ON/OFF state of ~~a~~ the power supply.

Also, ~~disposed~~ there is a communication part 101, and through this communication part 101, it becomes possible to ~~use a function for communicating~~ communicate with a switching machine and a server, ~~and~~ as well as to perform a GPS (Global Positioning System) function.

In addition, disposed in the ~~approximately~~ center of the hinge part 300, which connects the housing 200 and the housing 201, ~~disposed~~ there is the image pickup camera 109, which can be turned separately from the housings 200 and 201, and by means of this image pickup camera 109, image pickup of a motion picture and a still picture ~~is conducted~~can be carried out.

In the above-described portable telephone, according to ~~of~~ this embodiment, it is ~~tried~~ possible to improve the usability of the portable telephone in the closed state by ~~forming~~ providing the sub operation key 107 together with the sub display part 104 on the back surface thereof. In particular, it is possible to improve the usability of the

device, including the camera operation and so on.

Here, the sub operation key 107, which ~~was~~ has been disposed so as to improve the operability of the portable terminal when it is in the closed state, and, in particular, the operability ~~in~~thereof during camera shooting, will be described in more details.

We ~~studied~~ conducted a study as to determine for which ~~function out of~~ camera shooting functions an exclusive use key ~~is prepared for~~should be provided, on the occasion of carrying out camera shooting ~~in a state that~~ when the portable terminal ~~was~~ is closed. And, we determined that at least, an activation key for activating a camera function, a shutter key for instructing ~~a~~the start of shooting of image information, a zoom adjustment key for adjusting ~~a~~the size of the image information to be taken and a mode selection key for selecting ~~a mode of~~ between a motion picture mode or a still picture mode, are ~~prepared~~needed as exclusive use keys. In addition, although ~~the~~an activation key and ~~the~~a mode selection key are not necessarily required, by ~~preparing~~ providing them as exclusive use keys, it becomes possible to set a camera mode with the portable terminal in a folded state as it is, without opening the portable terminal. On that account, it becomes effective at the time of quick camera shooting and so on.

Next, we studied a layout of these keys. It is fine if each key is usable in the folded state, but it is impossible to secure sufficient operability and usability of the keys simply by disposing them on the same surface.

On one hand, we ~~are of the thought~~ have considered that, to make use of the sub display part 104 that is formed on the back surface as a view finder when the portable terminal is in the closed state and to operate ~~in a state of holding~~ the portable telephone while holding it in such a manner that the keys ~~are~~can be depressed by ~~a~~the thumb

~~are stable~~ provides stability in case of camera shooting, ~~and~~ allowing sufficient usability ~~can~~ to be secured~~,~~; and so, judging from that view point, it becomes desirable to dispose the above-described exclusive use keys on the back surface of the portable telephone.

However, the portable telephone is normally of a small size and has the sub display part 104 on the back surface so that ~~a~~the regions thereof is limited~~,~~; and, if the above-described ~~four~~4 keys are all disposed thereon, one key may come close to another ~~the other~~ key ~~and a~~, causing the size of ~~a~~ key itself ~~is~~to be limited, so that it becomes easy to ~~be~~ operated the key mistakenly. For example, when the shutter key is intended to be depressed ~~but~~, the activation key or the mode selection key ~~is~~may be mistakenly depressed, ~~and~~ as a result of which, the portable telephone undesirably returns to an initial camera shooting state and is switched from the still picture mode to the motion picture mode, so that it becomes impossible to take ~~an~~the image which is ~~wished~~intended to be taken.

Therefore, ~~we made such a~~ the structure of the portable telephone of this embodiment was designed so that a camera function setting key and an shooting time operation key are disposed without mixing them in the same plane. Here, the camera function setting key is an operation key for conducting setting of ~~a~~the camera function prior to shooting, such as the activation key, the mode selection key and so on. And, the shooting time operation key is~~, after~~ a key, ~~the camera function~~ such as a zoom key, the shutter key and so on, to be used after the camera function was activated; or, in case that a shooting mode of a motion picture or a still picture can be selected, it serves as an operation key for carrying out the camera operation during a period after the mode

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was selected until shooting is completed.

Furthermore, ~~we,~~ on the basis thinking that the camera function setting key is essentially a key which ~~is sufficient to~~ probably will be used only once at the beginning of operation and the shooting time operation key is a key which is handled a number of times during a period of shooting, we ~~determined~~ decided to ~~form~~ provide the shooting time operation key on the back surface and to ~~form~~ dispose the camera function setting key on the side surface. The reason ~~that~~ why the shooting time operation key was formed on the back surface is, as described above, that operability on the occasion of utilizing the sub display part 104 formed on the back surface as a view finder is good, and that it is possible to depress (operate) a key stably ~~by a~~ using the thumb in ~~a~~ the state ~~that~~ in which the portable telephone ~~was~~ is being held. Also, the reason ~~that~~ why the camera function setting key was formed on the side surface is, on the occasion of operating the zoom key and the shutter key, to prevent them from being mistakenly operated by ~~a~~ the thumb.

In addition, if the shooting time operation key is disposed on the side surface of the housing 200 or the housing 201, ~~a~~ the finger used for operating the shooting time operation key differs between ~~a~~ the case ~~that~~ where the housings ~~were~~ are held by ~~a~~ the right hand and ~~a~~ the case ~~that~~ where the housings ~~were~~ is held by ~~a~~ the left hand (e.g., ~~a~~ the thumb is used in case of the right hand, and an index finger is used in case of the left hand)~~,~~; and, therefore, if ~~it was~~ this key is disposed on the back surface of the housing 200 or the housing 201, it is possible to conduct a similar operation between the ~~case that~~ situation where the housings ~~were~~ are held by the right hand and the ~~case~~ ~~that~~ situation where the housings ~~were~~ are held by the left hand, i.e., ~~an~~ operation by

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athe thumb is possible in each case, so that the usability is ~~good~~improved.

The shooting time operation key carries out only a function ~~which was~~ that has been assigned in advance. It may be formed on the back surface as an exclusive use key ~~but~~; however, taking a series of operations which become necessary at the time of camera operation into consideration, it is configured by use of ~~such~~ software such that a key function is displayed on a sub display screen, and ~~a~~ when the key which corresponds to that display is selected ~~so that a~~, the displayed function is carried out, and it is configured such that the shooting which one wants is completed over changing the screen. ~~By~~ In this way, since a key which ~~was~~ is formed on the back surface is not ~~occupied~~ restricted to simply ~~with~~ one function, even in a normal standby state, other than the time of camera operation, it is possible to realize ~~other~~ another function by use of that key. A detailed embodiment thereof will be described later.

As described above, the shooting time operation key ~~is~~, like the sub operation keys 107a and 107b of Fig. 1(4), is disposed on the back surface of the housing 200, and the camera function setting key (the mode selection key 105 seen in Fig. 1(4)) is disposed on the side surface of the housing 201, without ~~mixing~~ interfering with the shooting time operation key~~,~~; and, thereby, it is possible to prevent ~~such~~ a wrong operation ~~that~~ in which the camera function setting key, instead of the shooting time operation key, is depressed by mistake~~, and~~. In addition, it is possible to easily operate ~~by a~~ the keys with the thumb, which is the easiest way to bring the necessary pressure out of the five fingers ~~over~~ while stabilizing the housings by supporting them ~~by a~~ in the palm of ~~a~~ the hand. ~~, and in addition, it is~~ This also makes it possible to conduct camera shooting without ~~few~~ blurring, so that the usability is improved.

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In addition, the shooting time operation key is a key which is used after the camera function ~~was~~ has been activated and a shooting mode, such as a motion picture mode or a still picture mode, ~~was~~ has been selected until the shooting is completed~~, and b.~~ Besides the shutter key, for example, a focus adjustment key for adjusting focus, a shutter speed adjustment key for adjusting shutter speed, a brightness adjustment key for adjusting the brightness of the image information, or a change key for changing ~~a~~the display screen during a period of camera shooting and so on may be used.

Also, even in a case ~~that it~~ where the portable terminal is configured to accept an input of the camera function setting key, such as the activation key, the mode selection key and so on, after the camera function ~~was~~ has been activated and the shooting mode, such as the motion picture mode, the still picture mode and so on, ~~was~~ has been selected until the shooting is completed, it is determined that a key such as the activation key, the mode selection key and so on is not included in the shooting time operation key in this specification.

Also, since there is no problem if the camera function setting key, such as the activation key, the mode selection key and so on, is disposed without ~~mixing~~ interfering with the shooting time operation key, such as the shutter key and so on, for example, ~~it~~the portable terminal may be configured such that, by use of an operation key which ~~was~~ is disposed on the front surface of the portable telephone, the camera function is activated or the motion picture mode or the still picture mode is switched, and by use of the sub operation key 107 (shooting time operation key), which ~~was~~ is disposed on the back surface, the shooting is conducted.

In the meantime, in accordance with this embodiment, as shown in Fig. 1(4), ~~it~~

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was the portable terminal is configured such that the sub operation key 107 is disposed on a downside than below the sub display part 104 with on the opposite side relative to the hinge part 300 as a standard, and they are used in that physical relationship. That is, it is configured the configuration is such that the sub display part 104 is disposed between the sub operation key 107 and the hinge part 300. Also, in this embodiment, it is displayed display is produced in such a manner that a downside the bottom of an object of shooting in the main display part 103 is located at the hinge part side, as seen in Fig. 1(1), and that an upside the top of the object of shooting in the sub display part 104 is located at the hinge part side, as seen in Fig. 1(4).

Generally, since the main display part 103 and the main operation keyboard 106 in the opened of the portable terminal state, as shown in Fig. 1(1), are used in such a physical relationship that the main operation keyboard 106 is disposed at a downside of below the main display part 103, by setting a the physical relationship of the sub display part 104 and the sub operation key 107 in the closed state according to the above-described structure, for. For example, in a case that where, after a predetermined input and so on was carried out with the terminal device in the opened state, camera shooting is carried out in the closed state, in case that after camera shooting was carried out in the closed state, a predetermined input and so on is carried out, and so on, it becomes possible to operate the portable terminal without changing a the hand which holds the housing 201 (without reversing top and bottom of the housing 201), and whereby the operability thereof is improved.

In addition, as shown in a publicly known reference 1, there is such a structure that a structure is known in which an operation key is disposed on an under part of the

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main display part in the same housing, but in this case, ~~there~~ it is ~~a necessity~~ necessary

to operate with shifting a lower housing upwardly~~,~~; and, when the operation is carried

out while holding the lower housing, it becomes an operation which straddles the hinge

part, so that key depression becomes unstable. Also, in case ~~that~~ there is a camera

located at the hinge part, the camera is ~~interrupted~~ likely to be covered by a finger ~~and a~~

or the hand on the occasion of operating a key, ~~and it is not one which~~ making it difficult

to realizes an operation of stable camera shooting and so on without changing a~~the~~

hand which holds the housing 201 (without reversing top and bottom of the housing

201), which is mentioned ~~in the embodiment~~ above.

Next, a~~the~~ shape of the sub operation key 107 will be described ~~by use of~~ with

reference to Fig. 13(1) to Fig. 13(3). Fig. 13(2) is an enlarged view of the operation key

107, and Fig. 13(3) is ~~an example of~~ a cross sectional view taken along y-y in Fig. 13(1)

in which the housing 200 ~~was cut at~~ is seen on a plane which is parallel to the hinge

part 300.

Here, as shown in Fig. 13(2), a ~~depression~~ recessed surface of the sub operation

key 107 is disposed in such a manner that the sub operation key 107 does not protrude

from the back surface of the housing 200. By this design, for example, it is possible to

prevent ~~such~~ a wrong operation ~~that~~ in which the sub operation key 107 is mistakenly

depressed in a case ~~that a~~ where the portable telephone ~~was~~ is put into a trousers

pocket, a jacket pocket, or a bag and so on.

Also, as shown in Fig. 13(3), ~~it~~ the structure is ~~configured~~ such that, when the

~~depression~~ recessed surface of the operation key 107 is depressed by a user, ~~and a~~

key switch ~~gets in touch~~ is moved into contact with a substrate, and thereby, an input

signal is inputted to CPU 110, ~~and~~ to initiate a selection operation and soon which a user wishes ~~is carried~~ to carry out. Here, the ~~depression~~ recessed surface of the sub operation key 107 ~~means~~ refers to a surface which is contacted in case ~~that a~~ the user depresses ~~an~~ the operation key.

Also, as described above, since there is a ~~fear of~~ concern that a wrong operation will occur when the sub operation key 107 is disposed on the back surface, it is desirable to configure this key in such a manner that ~~the sub operation key 107~~ it is ~~configured to be~~ able to be locked to disable ~~the input~~ actuation thereof. In this case, the CPU 110 may ~~process~~ function so as to enable or disable an input ~~of~~ from the sub operation key 107 on the basis of a sub operation key enable signal or a sub operation key disable signal, which was inputted through an exclusive use key or a setting screen and so on.

In the same manner, in the portable telephone of this embodiment, ~~it is configured that~~ camera shooting in the folded state can be carried out through operation of the sub operation key 107, and it is possible to carry out camera shooting in the opened state through operation of the main operation key 106. Therefore, to ~~configure~~ cause the CPU 110 ~~so as not~~ to not accept an input of the sub operation key 107 when the portable terminal is in the opened state becomes effective for improving the usability thereof. In this case, ~~it is configured that a fold~~ the folded state is detected by the fold detection part 108, and, in case ~~that~~ the opened state ~~was~~ is detected, the input of the sub operation key 107 is not accepted. At the same time, ~~it~~ the system may be configured so as to turn OFF a display of the sub display part 104, under these circumstances.

On ~~one~~ the other hand, it is possible to have the sub display part 104 active for

display~~ed~~ when the portable terminal is in the open~~ed~~ state~~, but~~; however, in this case, it

is desirable ~~that, by reversing~~ the reverse the top and bottom of an object of shooting

from the way which ~~was~~ it is displayed when the portable terminal is in the closed state,

while ~~and then, by~~ displaying it when the portable terminal is in the open state, ~~a~~ so that

the relationship between the top and bottom of the object of shooting on the main

display part 103 and that on the sub display part 104 are ~~made to be equal~~ the same.

~~Also in~~ In this case, a fold~~ed~~ state of the portable terminal is detected by the fold

detection part 108, and the relationship between the top and bottom of an object of

shooting, which is displayed on the sub display part 104, is made to differ between that

in the open~~ed~~ state and that in the closed state.

Next, camera shooting in the closed state of the portable terminal by use of the

sub operation key~~s~~ 107, which was briefly described so far, will be described in more

detail. Fig. 3 is a flow chart ~~thereof~~ of this operation, and Fig. 5 ~~is~~ shows an example of

a display screen which is displayed on the sub display part 104 during this operation.

In addition, ~~here,~~ as shown in Fig. 1(2) and Fig. 1-(4), it is assumed that there are

two sub operation keys 107 (107a, 107b) on the back surface of the housing 200. For

example, in a display screen as shown in Fig. 5(2), it is ~~configured~~ assumed that the key

107a ~~plays a role of~~ functions to control "ZOOM", as seen at ~~a~~ lower left ~~of~~ on the

screen, and ~~they key~~ 107b ~~plays a role of~~ functions to control "RECORD", as seen at a

lower right ~~of~~ on the screen. That is, ~~it is configured that~~ the two functions which ~~were~~

are displayed at the lower right side and the lower left side in the sub display part 104,

during this operation, are made to correspond to the two (left and right) sub operation

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keys 107 ~~are made to correspond~~, ~~and~~ so that by depressing the right side sub

operation key 107b, the function which was displayed at the lower right side in the sub

display part 104 is realized, for example.

Firstly, the CPU 110 stores ~~opened~~ and closed state information, which was

detected by the fold detection part 108, in the volatile memory 102a, for example, "0" in

the opened state, and "1" in the closed state. And, the CPU 110 refers to the ~~opened~~

and closed state information which was stored in the volatile memory 102a, and ~~controls~~

it carries out control so as to have the main display part 103 displayed a predetermined

display screen in the case of the ~~closed~~ open state, and ~~controls so as~~ to have the sub

display part 104 displayed a predetermined display screen in the case of the closed

state.

In this ~~embodiment~~example, it is ~~detected to be~~ assumed that the portable

terminal is in the closed state, and an idle screen is displayed on the sub display part

104 (S300, Fig. 5(1)).

Firstly, the processing, which is carried out in case ~~that~~ the motion picture mode

~~was~~ is selected by the mode selection key 105, will be described.

For example, when the mode selection key 105 is slid upward, a camera mode

activation signal and a motion picture mode signal are inputted ~~into~~ the CPU 110, and

the CPU 110 activates the camera 109 (S302) and refers to the ~~opened~~ and closed

state information which was stored in the volatile memory 102a (S303)~~, and~~. Then,

image information of an image which was taken by the camera 109 is displayed on the

sub display part 104 ~~through~~ under control of the CPU 110, and a motion picture

monitor is started (S304, Fig. 5(2)). On this occasion, on the sub display screen, ~~other~~

than in addition to the a motion picture which was is being monitored, ZOOM and RECORD are displayed as functions which can be carried out.

In additionthe foregoing example, here, a selection of the camera mode activation and the motion picture mode is was carried out by as one operation, but itthe invention is not limited to this, and there is no problem if an operation for activating the camera mode and an operation for selecting the motion picture mode are carried out separately.

Next, a user selects whether magnification of athe size of information of an the image which is being was displayed on the sub display part 104 is to be adjusted (zoom adjustment) or not (S305). In the case of carrying out the zoom adjustment, for example, on a screen of Fig. 5(2), the sub operation key 107-a to which a role controls of "ZOOM" was assigned is depressed, and, on the basis of a sub operation key ID information signal which was is inputted from the sub operation key 107a, the CPU 110 changes a set value of the electronic zoom magnification which was stored in a register (not shown) of the camera 109. Next, the CPU 110 counts an the adjustment level of the zoom adjustment (S313), and, on the basis of that level, a zoomed display of the image information is carried out (S304). That is, in case that the set value of the electronic zoom magnification was changed, information of an image which was taken by that magnification is displayed on the sub display part 104 through under control of the CPU 110 (zoom adjusting method 1).

Also, at this time, the CPU 110 displays a zoom adjustment level on the sub display part 104, for example, it displays "x2", as shown in Fig. 5(10), and so as to informs a the user of the zoom adjustment level.

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————Also, in this embodiment, it is ~~configured~~ possible to carry out the zoom adjustment in incremental steps by ~~repeating depression~~ repeated actuation of the sub operation key 107a, and for example, in case of ~~3~~three steps ~~as the steps~~ of zoom adjustment, every time ~~that~~ the sub operation key 107a is depressed, the CPU 110 ~~processes~~ functions to advance the zoom in such a manner that ~~a~~the level eventually returns to a normal level (level 1) ~~next~~following ~~to~~ a top level (level 3), like ~~a~~ level 1 → ~~a~~ level 2 → ~~a~~ level 3 →, ~~the~~ level 1 —> ~~the~~ level 2.

————In addition, the zoom adjustment may be carried out successively by continuously depressing the sub operation key 107a for a long time, rather than ~~but not~~ in incremental steps.

Next, in case ~~that the~~ zoom adjustment is not carried out, or in case ~~that~~ motion picture shooting is started after the zoom adjustment ~~was~~ has been completed, for example, as seen in a screen of Fig. 5(2), the sub operation key 107b, ~~to~~ which ~~a role~~ controls the function ~~of~~ "RECORD" ~~was assigned~~, is depressed, and ~~the~~ motion picture shooting is started (S306).

In this case, the CPU 110, on the basis of the sub operation key ID information signal which ~~was~~ is inputted from the sub operation key 107b, compresses image information of an image which was taken by the camera 109 as motion picture preparation use image data, and it stores the compressed data in the volatile memory 102a~~, and~~. It then displays the information of an image which was taken by the image pickup camera 109 on the sub display part 104 (S307, Fig. 5(3)). Also, the CPU 110 activates the microphone 111, ~~and~~ compresses sound data which is outputted from the microphone 111 to CPU 110 as motion picture preparation use sound data, and stores

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the compressed data in the volatile memory 102a. On this occasion, during a period ~~that~~ in which motion picture shooting is being carried out, in order to inform a user that monitor motion picture shooting is going on, the CPU 110, for example, as shown in Fig. 5(3), displays a character ~~of~~ "REC" on the sub display part 104, and it displays a transitional state of current ~~record~~ recording time so as to record the setting time by means of numerical characters and so on. ~~By~~ In this way, a user can recognize that the motion picture shooting is going on and how much ~~record~~ recording time remains, so that the usability is good.

Also, if it can be simply seen that the motion picture shooting is going on, ~~a mode to be informed~~ the manner in which such information is indicated is not limited to the above-described one, and a bar graph, an icon and so on may be utilized (Fig. 5(11)). ~~By~~ In this way, it is possible to recognize viscerally that the motion picture shooting is going on and how much ~~the~~ recording time remains.

On ~~one~~ the other hand, ~~CPU 110,~~ when the motion picture shooting is started, the CPU 110 refers to the record setting time information which was stored in the volatile memory 102a, and it starts a timer function which has the ~~referred~~ record setting time as a set value in CPU 110. In case ~~that~~ the time which ~~was~~ is being counted by the timer function passes ~~over~~ the record setting time (S308), or in case ~~that~~ a user, for example, as seen in a screen of Fig. 5(3), carries out an operation, such as depressing the sub operation key 107b to which ~~a~~ the ~~role of~~ "STOP" function was assigned, and so on (S309), the CPU 110 stops compression of the motion picture preparation use image data and the motion picture preparation use sound data, ~~and~~ stops operation of the camera 109 and the microphone 111, and combines the compressed motion picture

preparation use image data and the motion picture preparation use sound data, and, thereby, prepares a file of a MPEG4 format, and stores it in the volatile memory 102a. During a period of carrying out this processing, the CPU 110, for example, by use of a screen as shown in Fig. 5(4), informs athe user that "DURING PROCESSING" is going on, so as not to give concern of a failure and so on to athe user.

Furthermore, the CPU 110 refers to information of a head 1 frame from the motion picture data, which was stored in the volatile memory 102a, and carries out decoding processing of the information of the head 1 frame which was referred to, and displays the decoded image information (1st frame) on the sub display part 104 (S310).

And, a user refers to the image information of this 1st frame, and he/she can select whether the motion picture information which was stored in the volatile memory 102a so far is to be stored in the non-volatile memory 102b or not (S311).

In case that the motion picture information stored in the volatile memory 102a is stored in the non-volatile memory 102b, for example, as seen in athe screen of Fig. 5(25), when the sub operation key 107b to which a role of the function "STORE" was assigned is depressed, the CPU 110, on the basis of the sub operation key ID information signal which was inputted, stores the file of MPEG4 format that is stored in the volatile memory 102a in the non-volatile memory 102b (S312). After that, when the sub operation key 107b to which a role of the function "CONFIRM" was assigned is depressed, the CPU 110 again starts again the motion picture monitoring (Fig. 5(6)).

On one the other hand, for example, as seen in athe screen of Fig. 5(5), when the sub operation key 107b to which a role of the function "RETURN" was assigned is depressed, the CPU 110 displays information of an image which was taken by the

image pickup camera 109 on the sub display part 104, and <u>again</u> starts ~~again~~ the motion picture monitoring (S304, Fig. 5(2)).

~~On one hand, in~~ <u>In</u> case of returning to the motion picture monitor display again~~,~~ without storing the motion picture <u>that is</u> stored in the volatile memory 102a in the non-volatile memory 102b, for example, <u>as seen</u> in ~~a~~<u>the</u> screen of Fig. 5(5), when the sub operation key 107a to which ~~a role of~~ <u>the function</u> "RETURN" was assigned is depressed, a motion picture shooting data deletion signal is inputted ~~in~~ <u>to the</u> CPU 110, and <u>the</u> CPU 110 deletes image data which was stored in the volatile memory 102a from ~~a~~<u>the</u> start of motion picture shooting ~~of~~<u>at</u> S307, and <u>it</u> displays information of an image which was taken by the image pickup camera 109 on the sub display part 104, ~~and~~ <u>following which</u> ~~starts again the~~ motion picture monitoring <u>is started again</u> (S304, Fig. 5(2)).

In addition, in <u>the</u> case of finishing the motion picture shooting, it is ~~finished~~ <u>ended</u> by sliding the mode selection key 105 upwardly again. That is, <u>the</u> CPU 110, on the basis of a signal from the mode selection key 105, displays an idle screen<u>, as</u> shown in Fig. 5(1)<u>,</u> on the sub display 104.

Also, it may be ~~configured~~ that <u>the</u> CPU 110, for example, displays an item ~~of~~ "RETURN" at ~~a~~<u>the</u> lower left of ~~a~~<u>the</u> screen of Fig. 5(3)~~,~~<u>; whereby,</u> and in case ~~of~~ there is no "STOP" operation within the above-described record setting time, when the sub operation key 107a to which ~~a role of~~ <u>the function</u> "RETURN" was assigned is depressed, <u>the</u> CPU 110 stops compression of the motion picture preparation use image data and the motion picture preparation use sound data, and stops <u>operation of</u> the microphone.

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~~By~~In this way, in case ~~that the~~ motion picture shooting is mistakenly started, ~~and~~ or in case ~~that~~ a user starts the motion picture shooting but changes his/her mind and wishes to stop the motion picture shooting, it is possible to quickly return to a monitoring state of the motion picture shooting. On that account, it is possible to ~~heighten~~ enhance the efficiency of processing of the CPU 110, so that the usability is improved.

Also, ~~a~~the method of carrying out the zoom adjustment is not limited to the above-described method~~, and for~~. For example, it may be ~~configured~~ that ~~a~~the set value of pickup image size of the image pickup camera 109 is changed, and from information of an image which was taken by the camera 109 after the set value was changed, ~~a size of~~ the image of a size before such change is pulled out.

Next, processing in the case ~~that~~ where the still picture mode was selected by the mode selection key 105 will be described. In ~~addition~~this regard, since the processes from steps S301 to S303 ~~is~~ are the same as in the motion picture mode, a description thereof will be omitted. However, there is a difference ~~on a point~~ in that the mode selection key 105 is slid to ~~a~~the downside to which the still picture mode function was assigned.

When the still picture mode is started (S314, Fig. 5(7)), a user selects whether adjustment of the magnification of ~~a~~ the size of information of an image which was displayed on the sub display part 104 (zoom adjustment) is to be carried out or not (S315). In addition, since ~~an~~the operation ~~in case of~~ for carrying out ~~the~~ zoom adjustment (S315, S321) is the same as that in the motion picture mode, a description thereof will be omitted.

Next, in case ~~that~~ the zoom adjustment is not carried out, or in case ~~that~~ motion

picture shooting is carried out after the zoom adjustment ~~was~~ has been completed, for example, as seen in ~~a~~ the screen of Fig. 5(7), the sub operation key 107b to which a ~~role of~~ the function "SHOOT" was assigned is depressed, and ~~the~~ still picture shooting is carried out (S316). In this case, the CPU 110, on the basis of the sub operation key ID information signal which was inputted from the sub operation key 107b, compresses information of an image which was taken by the camera 109 as motion picture preparation use image data, and stores the compressed data in the volatile memory 102a, for example, it stores it as data ~~of~~ having a format like YUV(4:2:2) in the volatile memory 102a~~, and~~. Then, it stops the shooting of the camera 109 (S317) and displays the information of an image which was stored in the volatile memory 102a on the sub display part 104 (S318, Fig. 5(8)).

After that, ~~a~~ the user selects whether the still picture which was stored in the volatile memory 102a is to be stored in the non-volatile memory 102b or not (S319, Fig. 5(8)).

In the case ~~that~~ where the still picture which was stored in the volatile memory 102a is to be stored in the non-volatile memory 102b, in ~~such a~~ the state ~~that~~ in which the information of an image which was shot is being displayed on the sub display part 104, for example, as seen in ~~a~~ the screen of Fig. 5(8), the sub operation key 107b to which the function ~~a role of~~ "STORE" was assigned is depressed (S319). By this operation, on the basis of the sub operation key ID information signal which ~~was~~ is inputted from the sub operation key 107b, the CPU 110 compresses the data of YUV (4:2:2) format which was stored in the volatile memory 102a by, for example. JPEG format, and stores it in the non-volatile memory 102b (S320, Fig. 5(9)).

Also, in the case of returning to the still picture monitor display (Fig. 5(7)) in such a the state that in which information of an image which was shot was is being displayed on the sub display part 104 (Fig. 5(8)), for example, as seen in athe screen of Fig. 5(8), when the sub operation key 107a to which a role of the function "RETURN" was assigned is depressed (S316), the CPU 110 again starts again the shooting of the image pickup camera 109, and displays the information of an image which was is taken by the image pickup camera 109 through under control of the CPU 110 on the sub display part 104, and starts again the still picture monitoring (S314).

Also, in case of finishing the motion picture shooting, it is finished ended by sliding the mode selection key 105 downwardly again. That is, the CPU 110, on the basis of a signal from the mode selection key 105, displays an idle screen, as shown in Fig. 5(1) on the sub display part 104.

By the foregoing operations, without taking the trouble to open athe portable telephone, the motion picture mode or the still picture mode is made to can be activated, and by utilizing the sub operation keys 107a and 107b, which were are disposed on the back surface, it is possible to carry out the image shooting, so that the usability of the portable telephone is improved.

Also, since a user displays the information of an image which was taken by the image pickup camera 109 is displayed on the sub display part 104, before storing the user stores the image information in the non-volatile memory 102b, and so that after that, he/she can select whether it is to be stored in the non-volatile memory 102b or not, it is possible to store only an image which a user really wish wishes to store in the non-volatile memory 102b, so that the usability is goodimproved.

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Furthermore, since there is no necessity to store information of an image which ~~was~~ has failed to be taken and information of an image which was mistakenly taken in the non-volatile memory 102b, it is possible to effectively make use of a limited memory capacity.

In addition, image information of a motion picture or a still picture which was taken, for example, is stored in the memory 102 by use of a format as shown in Fig. 4 (S312, S320). ~~It~~ This information is recorded in association with each item, such as, for example, ~~as~~ a storage format, an "image number" which represents a number ~~of information~~ of an image which was taken, an "image data name" which represents a name ~~of~~ which identifies the image data, a "data format" which represents ~~a~~ the data format, such as JPEG, MPEG and so on, an "amount of data" which represents the capacity of the data, an "image pickup date" which represents ~~a~~ the date of the image pickup, ~~and~~ "GPS additional information" which represents additional information, such as GPS information. ~~and so on,~~ "Copyright information is also recorded indicating the good and status bad of an attachment to ~~a~~ mail ~~of copyright information"~~ which represents whether it is ~~good~~ acceptable or not to attach data of an image ~~which was taken~~ to ~~a~~ mail, "the good and bad status of serial transfer of copyright information" which represents whether it is ~~good~~ acceptable or not to serially transfer data of an image ~~which was taken~~ to another information processing terminal, for example, a PC, FDA, a portable telephone and so on, and "the number of possible reproductions of copyright information (or time of possible reproductions)" which represents the number (or time) of reproduction of data of an image which was taken, and so on. If ~~it~~ the information is stored in the ~~suchlike~~ described manner, it is ~~suitable~~ available on the

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occasion of utilizing data of an image which was taken.

In the meantime, the above-described sub operation key 107 is controlled by <u>the</u> CPU 110, and even if the same key was depressed, in a different state, it may be treated as a different input signal.

———For example, the sub operation key 107 is, in <u>the</u> case of a normal standby state, for example, as shown in Fig. 14, used for switching a screen of the sub display part 104. Hereinafter, ~~it~~<u>this operation</u> will be described ~~by use of~~<u>with reference to</u> Fig. 14.

Fig. 14(1) ~~is~~<u>shows</u> an example of a screen in which set information of a mode, such as "MANNER MODE" and so on, ~~was~~<u>is</u> displayed, ~~and~~ Fig. 14(2) ~~is~~<u>shows</u> an example of a screen in which current time information ~~was~~<u>is</u> displayed in an enlarged manner, and Fig. 14(3) ~~is~~<u>shows</u> an example of a screen in which newly arrived information ~~of~~<u>concerning</u> a telephone <u>call</u>, ~~a~~ mail and so on ~~was~~<u>is</u> displayed.

In each screen of Fig. 14(1) to Fig. 14(3), the sub operation key 107a functions as a "RETURN" key, and the sub operation key 107b functions as a "NEXT" key.

———When the "NEXT" key 107b is depressed, a screen transition signal is inputted to <u>the</u> CPU 110 as an input signal, and<u>, in response to</u> ~~CPU 110 which received~~ the screen transition signal <u>, the CPU 110</u> switches ~~a~~<u>the</u> display screen of the sub display part 104 to ~~a~~<u>the</u> next screen. By repeating this operation, ~~a~~<u>the</u> screen is switched in ~~such manner~~<u>the sequence</u> of Fig. 14(1) → Fig. 14(2) → Fig. 14(3) → Fig. 14(1)→ ....

On <u>the</u> one hand, when the "RETURN" key 107a is depressed, a screen return signal is inputted to <u>the</u> CPU 110 as an input signal, and ~~CPU 110 which received~~ <u>in response to</u> the screen return signal<u>, the CPU 110</u> switches a display screen of the sub display part 104 to a previous screen. By repeating this operation, a screen is switched

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in ~~such manner~~ the sequence of Fig. 14(1) → Fig. 14(3) → Fig. 14(2) → Fig. 14(1) →

....

In contrast to this, in the case of the camera mode, in which shooting is carried out by the image pickup camera 109, the sub operation key 107a is assigned by CPU 110 as an operation key regarding camera shooting, for example, as the shutter key, and when the sub operation key 107a is depressed, a shutter signal is inputted ~~into~~ the CPU 110 as an input signal.

In addition, as seen in Fig. 14(3), in case ~~that~~ there is no newly arrived information, it may be ~~configured~~ that the number is displayed as "0", and a screen ~~itself of~~ such as shown in Fig. 14(3) is not displayed. In this case, ~~it is controlled by~~ the CPU 110 effects control in such a manner that, when the "NEXT" key 107b is depressed in the case of Fig. 14(2), ~~it~~ the screen is changed to that of Fig. 14(1), and when the "RETURN key 107a is depressed in the case of Fig. 14(1), ~~it~~ the screen is changed to Fig. 14(2)".

~~By~~ In this way, ~~by such an arrangement that the~~ to cause a screen ~~itself regarding~~ for showing newly arrived information ~~to be is~~ not displayed in case ~~of~~ there is no newly arrived information, a user can confirm the presence and absence of newly arrived information sensuously by a transition state of ~~a~~ the screen, so that the usability is ~~good~~ improved.

As described above, since the sub operation key 107 changes ~~a role~~ the function of an input signal as the case may be and one operation key can be used to initiate ~~play~~ a plurality of ~~roles~~ functions, in a small size terminal, like a portable telephone, it is possible to effectively make use of a space, which contributes to reduction of the circuit

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size.

Furthermore, for example, in case of playing a game by using making use of the sub display part 104, and in case of displaying information regarding music, such as a music file etc. of mp3 format etc. in the sub display part 104, it is possible to make use of it the sub operation key 107 as an operation key for them these functions.

In addition, in the above-described embodiment, the case an example of completing camera shooting in the closed state was described, but next, a structure which enables camera shooting successively continuously, even if it goes into such a state that a when the portable telephone was is opened in midstream of its operation, will be described.

In this case, the CPU 110, if it confirms that it goes into the portable terminal has changed to the opened state from the closed state with reference to the opened and closed state information which was detected by the fold detection part 108, holds once a the state of a the camera operation which was carried out by the sub operation key 107 so far (a the display screen in use, a the zoom adjustment level and soon), and displays a display screen which was associated in advance associated with the display screed screen which was held on the main display part 103 (e.g., Fig. 5(12)).

Here, in the non-volatile memory 102b, a display screen produced in each step which is displayed on the sub display part 104 (e.g., Fig. 5(1) to Fig. 5(9)) and a display screen produced in each step which is outputted to the main display part 103 are stored in association with each other. In addition, although it is not shown in the figures, it is configured that the CPU 110 outputs a screen which corresponds to Fig. 5(1) to Fig. 5(9) as a display screen which is displayed on the main display part 103 when the

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portable terminal is in the opened state. In this case, it is desirable that the number of display screens which are displayed on the sub display part 104 is made to be equal to the number of display screens which are displayed on the main display part 103.

Fig. 5(12) is similar to Fig. 5(1) and shows an example of a display screen which was is associated with it; and, in a state that a the case where the portable telephone was is in the opened state, it is possible to make use of the main operation key 106. On that account, other than in addition to "ZOOM" and "SHOOT", adjustment of "EXPOSURE" is assigned to the operation key, and also, taking the size of an the area of the main display part into consideration, it was is designed that to also display information indicating a remaining amount power capacity of a rechargeable battery, the time and so on are also displayed. Also, taking a the difference of a in screen size between the sub display part 104 and the main display part 103 into consideration, information of an image which was taken by the camera is processed so as to be displayed with a size which is coordinated with the screen size.

By In this way, even if the portable telephone in the closed state was is changed to the opened state during a period that in which the camera shooting function is activated, it is possible to carry on with the camera shooting through a display screen which is suited to the respective states, so that the usability is improved. It is the same as in a the case that where the portable telephone in the opened state was is changed to the closed state.

In addition, the associated display screen is not limited to a display screen as shown in Fig. 5(12), but, for example, it may be configured that the display screens which are displayed on the sub display part 104 and the main

display part 103 become a similar screen, with similar key assignment. If it is configured so in this way, there is such an advantage in that, even if the portable telephone in the opened state is transferred changed to the closed state, a the camera operation can be carried on by a similar operation.

Also, here, in order to easily carry out a search of the associated display screens, search information is added to each display screen data, such as, for example, in a screen as shown in Fig. 5(7), "sub07" is added, and in a display screen which is displayed on the main display part which corresponded to that, "main07" is added. On the basis of this search information, the CPU 110 searches for a screen to be outputted, and outputs it to the respective display parts. By In this way, it is possible to heighten enhance the search efficiency of the associated display screens. In this case, by making use of the search information, a display mode to be displayed on the sub display part 104 and a display mode to be displayed on the main display part 103 are stored in the non-volatile memory 102b in such a manner that the modes are associated with each other.

As described above, switching from main to sub in camera shooting was described taken as an example, but it the invention is not limited to the camera shooting, and it is applicable to one an operation which outputs an image to a predetermined display screen.

In On the meantime other hand, as shown in Figs. 1(2) and 1(4) etc., the reason that why the number of sub operation keys to which the shooting time operation key was assigned is set to be 2 two is because an the area of the back surface of the housing 200 is limited, and it if the number of keys becomes 3 three and more, a the

distance between keys becomes narrower, so that there is a ~~fear to invite such~~ concern that a wrong operation will occur, ~~that~~ in which an adjacent key is mistakenly depressed and so on.

——Therefore, for example, ~~if it is configured so as~~ in order to prevent a ~~fear of~~ concern that a wrong operation ~~by changing a~~ may occur, the shape of a key, such ~~that~~ providing one ~~is~~ as a slide type key (Fig. 12(1), and by making ~~a~~ the distance between keys larger (Fig. 12(2)), it ~~may be configured that~~ is possible to provide, for example, ~~3~~ three keys, and more of the shooting time operation key~~s~~, such as the shutter key, the zoom adjustment key and so on, are disposed on the back surface of the housing 200.

Also, ~~here,~~ as shown in Fig. 12(2), in case of a ~~3~~ three key structure on the back surface, it is possible to make use of a circuit regarding main operation keys 106a, 106b and 106c for sub operation keys 107a, 107b and 107c on the back surface without any change, which contributes to a reduction of the manufacturing cost.

Also, in case ~~that the~~ sub operation key 107 is ~~2~~ provided as two keys, since there is a ~~fear~~ concern that, when the two sub operation keys 107a and 107b ~~to be~~ ~~disposed~~ are disposed ~~to be two keys up and down~~ above and below each other, when the up~~per~~ operation key ~~was~~ is pressed by ~~a~~ the thumb, ~~and~~ the ~~down~~ lower operation key ~~is~~ will also be depressed, so that the usability is bad. Thus, ~~,~~ as shown in Figs. 1(2) and 1(4) etc., they ~~may~~ should be disposed on the left and right~~;~~ and, for example, as shown in Fig. 12(2), it is even more preferable to ~~have~~ disposed them ~~with sifted~~ as shifted in an oblique direction.

Also, it is preferable ~~to configure that~~ if, for example, the functions of the sub operation keys 107a and 107b at the time of camera operation are made to be the same

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as ~~that~~ those of the main operation keys 106a and 106b, and an operation when the portable terminal is in the open~~ed~~ state is made to be the same as ~~an~~the operation performed when the portable terminal is in the closed state. That is, it is preferable ~~to configure so as~~ to be able to realize similar ~~ones to~~ processing operations to those which were ~~shown in~~ described with reference to Figs. 3 and 5 by use of the main operation keys 106a and 106b when the portable terminal is in the open~~ed~~ state. ~~By~~In this way, ~~a~~the necessity to take the trouble to change operations between ~~in~~ the open~~ed~~ state and ~~in~~ the closed state of the portable terminal is eliminated, so that the usability ~~of~~by a user is improved.

Furthermore, in this embodiment, a sound hole is disposed between the sub operation key~~s~~ 107a and 101b, and by this, a user can easily identify ~~a~~the position of the sound hole by tactile sensation. On ~~, and on~~ the basis of that, ~~a~~the physical relationship of both keys becomes clear, and, therefore, without taking the trouble to identify ~~a~~the position of the key, it is possible to operate it sensuously. Also, ~~by~~in this ~~a~~way, the distance between the sub operation keys 107a and 107b is ~~taken~~apparent, so that it is possible to prevent a wrong operation, such as a wrong key depression and so on.

In addition, ~~here,~~ the sound hole of a music speaker ~~was~~is disposed between the sub operation keys 107a and 107b. However, ~~it~~the invention is not limited to this, but, in order ~~if it is possible~~ to clarify ~~a~~the physical relationship of ~~the~~ both keys, a convex prong or a concave groove and so on may be disposed therebetween. In ~~the meantime~~addition, in this embodiment, the mode selection key 105, which is used also as the activation key~~ was~~, is formed on the side surface of the housing 201 ~~by use~~and

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is in the form of a slide type key~~, but~~; therefore, since a certain degree of ~~power~~ force is

required in order to ~~have~~ slide the operation key ~~slid~~ for mode selection, it is configured

so as to prevent a wrong operation ~~of a~~ by the user. In particular, the usability is good

~~on a~~ from the point of view that, even if the mode selection key 105 ~~was~~ is depressed

without sliding when the housing ~~was~~ is held, ~~it is~~ the key will not be operated.

Also, assuming that the mode selection key 105 is disposed on the side surface

of the housing 200, and that when sliding it upward when the portable telephone is in

the closed state, ~~a~~ the mode is transferred to the motion picture mode, and when sliding

it downward, it is transferred to the still picture mode. When~~, when~~ sliding it upward ~~in a~~

~~state that a~~ when the portable telephone ~~was~~ is opened, although it ~~was~~ is transferred to

the motion picture mode in the closed state, here, it is transferred to the still picture

mode.

Therefore, as shown in Fig. 1, when a slide type key is used as the mode

selection key 105 and it is disposed on the side surface of the housing 201, regardless

of the open~~ed~~ and closed states of ~~a~~ the portable telephone, the same mode selection

can be realized by the same slide operation, so that usability is ~~good~~ improved.

Next, ~~processing~~ the operations of the main display part 103 and the sub display

part 104 at the time of camera shooting will be described.

Firstly, ~~in a state that a~~ the operations that are performed when the portable

telephone ~~was~~ is in the open~~ed~~ state, ~~it~~ will be described. In a case ~~that~~ where the ~~a~~

lens of the image pickup camera 109 ~~was~~ is directed toward ~~a~~ the user, unless ~~a pickup~~

the image of ~~a~~ the user himself/herself at this time is displayed on the main display part

103 ~~by~~ as a mirror image, for example, in a case ~~that~~ where ~~a~~ the user move~~d~~s to the

right, ~~but,~~ on the screen, ~~it is~~ the displayed image shows that ~~a~~ the user has moved to the left, ~~and~~ there is a problem that it is hard to shoot. On that account, the CPU 110 detects that ~~a~~ the portable telephone is in the opened state by use of the fold detection part 108, and detects that the image pickup camera 109 faces toward ~~a~~ the user by use of, for example, a sensor, a switch and so on, ~~and~~ in response to which the CPU 110 carries out ~~flip~~ a horizontal reversal of ~~an~~ the image.

Next, in a case ~~that a~~ where the lens of the image pickup camera 109 is directed toward an object of shooting, which ~~was~~ is opposed to ~~a~~ the user, in a state ~~that a~~ in which the portable telephone ~~was~~ is in the opened, at this time, if the image pickup camera 109 is approximately 180 degrees folded around ~~an~~ the X-X axis of Fig. 1(1), ~~an~~ the image which is displayed on the main display part 103 becomes upside down. In this connection, the CPU 110 detects that a portable telephone is in the opened state by use of the fold detection part 108, and detects that the image pickup camera 109 faces toward ~~a user~~ an object of shooting by use of, for example, a sensor, a switch and so on, and ~~carries out flip~~ performs a vertical flipping of ~~an~~ the image. Also, in this case, it is ~~also~~ possible to display an image which was taken in by the image pickup camera 109 on the sub display part 104~~;~~ and, on this occasion, the CPU 110 detects that ~~a~~ the portable telephone is in the opened state by use of the fold detection part 108, and detects that the image pickup camera 109 faces toward a user by use of, for example, a sensor, a switch and so on, and ~~carries out flip~~ performs a horizontal flipping of ~~an~~ the image, ~~and displays it~~ whereby the image is display upright on the sub display part 104.

Next, ~~a state that~~ the operations which occur when a portable telephone ~~was~~ is in the closed state will be described. In case ~~that a~~ the lens of the image pickup camera

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109 is directed toward ~~a~~ the user ~~in the state that a~~ while the portable telephone ~~was~~ is in the closed state, at this time, as described above, since an image which is displayed on the sub display part 104 should be a mirror image, the CPU 110 detects that ~~a~~ the portable telephone is in the closed state by use of the fold detection part 108, and detects that the image pickup camera 109 faces toward ~~a~~ the user by use of, for example, a sensor, a switch and so on, and ~~carries out flip~~ performs a horizontal flipping of ~~an~~ the image.

Next, in case ~~that a~~ the lens of the image pickup camera 109 is directed toward an object of shooting which is positioned opposite to ~~a~~ the user ~~in the state that a~~ while the portable telephone is in the ~~was~~ closed state, as described above, since ~~an~~ the image is displayed upside down on the sub display part 104, the CPU 110 detects that ~~a~~ the portable telephone is in the open~~ed~~ state by use of the fold detection part 108, and detects that the image pickup camera 109 faces toward ~~a user~~ an object of shooting by use of, for example, a sensor, a switch and so on, and ~~carries out flip~~ performs a vertical flipping of ~~an~~ the image.

As described above, by detecting the open~~ed~~ and closed states of ~~a~~ the portable telephone and ~~a~~ the direction ~~of~~ in which the camera is pointing at that time, and by having a display ~~mode~~ of the main display part 103 or the sub display part 104 flipped horizontally or flipped vertically, the usability at the time of shooting is improved.

Also, in case ~~that~~ the camera is directed toward an object of shooting in the open~~ed~~ state, by displaying an image pickup monitor screen not only on the main display part 103, but also on the sub display part 104, a person who is ~~shot~~ the (object of shooting) can also confirm ~~a~~ the state of shooting himself/herself, and, therefore, it is

possible to ~~be shot~~ perform the shooting at ease.

Still also, it may be ~~configured~~ that after shooting, without any change of the state ~~that~~ in which a portable telephone ~~was~~ is closed, by use of the sub display part 104, confirmation or deletion and so on of an image which was taken ~~is~~ can be carried out.

In this case, for example, when ~~a~~ the mode is changed to a browsing mode for confirming images which were taken by the mode selection key 105, the CPU 110 displays the images which were taken on the sub display part 104. As a display mode, it is fine if the images which were taken can be confirmed, and, for example, the images which were taken may be displayed one by one in ~~an~~ a chronological ~~record~~ order of recording, or they may be displayed as a list. On that occasion, if a user selects an image which he/she wants to delete by use of the sub operation key 107 and instructs deletion of an image, an image deletion instruction signal is inputted through the sub operation key 107 to the CPU 110, and the CPU 110 carries out processing to delete image data which was stored in the memory 102.

Also, it ~~may be designed~~ is possible to carry out editing and so on of images which were taken, by use of the sub display part 104. In this case, when ~~a~~ the mode is changed to an editing mode by depressing the mode selection key 105, the CPU 110 displays a screen for selecting an editing function, such as, for example, black and white, sepia, frame and so on, on the sub display part 104. When a user selects any one of the editing functions by operation of the sub operation key 107, ~~the~~ an editing instruction signal is inputted to the CPU 110, and the CPU 110 edits image data on the basis of the editing instruction signal.

~~By~~ In this way, without taking the trouble to open ~~a~~ the portable telephone after

shooting, <u>and</u> without any change of the state ~~that~~ <u>in which the</u> a portable telephone ~~was~~ <u>is</u> folded, ~~the~~<u>a</u> limited number of sub operation keys are used<u>;</u> and<u>,</u> thereby, it is possible to carry out confirmation, editing and so on of images which were taken<u>,</u> so that <u>the</u> usability is improved.

Next, processing in case of sending a mail with a still picture or a motion picture ~~which was taken~~ as an attachment file, after the still picture or the motion picture ~~was~~ <u>have been</u> taken<u>,</u> by making use of the above-described sub operation key 107, in a state ~~that a~~ <u>in which the</u> portable telephone ~~was~~ <u>is</u> closed<u>,</u> will be described (second embodiment)~~. Hereinafter, it will be described by use of a~~<u>, hereinafter with reference to</u> <u>the</u> flow chart of Fig. 6 and ~~a~~<u>the</u> display screen example of Fig. 7.

In addition, since <u>the</u> process~~es~~<u>steps</u> from S601 to S605 of Fig. 6 are ~~ones~~ <u>steps</u> which are formed by simplifying <u>the</u> process~~es~~<u>steps</u> from <u>steps</u> S304 to S312 and from <u>steps</u> S314 to S320 of Fig. 3, and Figs. 7(1) and 7(2) are the same as Figs. 5(7) and 5(8), <u>the</u> descriptions thereof will be omitted here.

Now, <u>as seen</u> in Fig. 7(3), the sub operation key 107a functions as a "RETURN" key and the sub operation key 107b functions as a "MAIL" key.

When a signal from this "RETURN" key 107a is inputted to <u>the</u> CPU 110 (S606), <u>the</u> CPU 110 deletes ~~a~~<u>the</u> display which was <u>being</u> displayed on the sub display part 104, and displays a still picture or a motion picture (1st frame)<u>,</u> as shown in Fig. 7(2), ~~newly~~ on the sub display part 104.

On ~~one~~<u>the other</u> hand, <u>as seen</u> in Fig. 7(3), when a signal from a mail key 107b is inputted to <u>the</u> CPU 110 (S606), <u>the</u> CPU 110 activates <u>the</u> E-mail mode (S607), ~~and~~ secures a region for use in mail editing in the non-volatile memory 102b, and designates

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still picture data or motion picture data which was stored in the non-volatile memory 102b as a file which is to be attached to a mail to be sent. Subsequently, the CPU 110 refers to address book data which was stored in the non-volatile memory 102b, and, for example, as shown in Fig. 7(4), displays name information of friends, acquaintances and so on ("AAA", "BBB"...) on the sub display part 104 (S608). Here, the name information, if it represents friends, acquaintances and soon, may not be real names, but may be nicknames, cryptographs or numerical characters and so on.

In Fig. 7(4), the sub operation key 107a functions as a "DECIDE" key, and the sub operation key 107b functions as a "SCROLL" key.

——When a signal from the scroll key 107b is inputted to the CPU 110, the CPU 110 scrolls a cursor and so on, for example, for selecting a person to which a mail is to be sent from a list of names information which is displayed on the sub display part 104.

——Also, when a signal from the decide key 107a is inputted to the CPU 110, the CPU 110, in order to confirm a the user whether a person who was selected by the cursor and so on is set to be a destination to which a mail is to be sent or not, displays a display for having a user select availability of sending mail to the selected person, for example, as shown in Fig. 7(5), on the sub display part 104 (S609).

Also, as seen in Fig. 1(5), in the same manner as shown in Fig. 7(4), the sub operation key 107a functions as a "DECIDE" key, and the sub operation key 107b functions as a "SCROLL" key.

In a state that a case the cursor was moved to a the position of "NO" by the scroll key 107b, when a signal from the decide key 107a is inputted to the CPU 110, the CPU 110 displays a screen for selecting a another person to which a mail is to be sent, as

seen in Fig. 7(4), on the sub display part 104. On this occasion, if ~~it is configured to put~~ the cursor is moved to a position of the name information of the destination designated the last time to which a mail ~~is~~was sent, a necessity to take the trouble to search again in the name information list from its head is eliminated, so that the usability is improved.

On the one hand, ~~in a state that~~ when the cursor ~~was~~ is moved to ~~a~~the position ~~of~~ "Yes" by the scroll key 107b, ~~when~~ and a signal from the decide key 107a is inputted to the CPU 110, the CPU 110~~,~~ searches the address book data which was stored in the non-volatile memory 102b ~~by use of a~~ using the name of a person who was selected in S608 as a search key, and refers to a mail address which corresponds to the search key, and copies it in a mail address region for use in editing mails which was secured in the non-volatile memory 102b.

After that, the CPU 110, for example, establishes a link to a communication network, such as a portable telephone network and so on, and then, connects to a mail server (not shown). Subsequently, the CPU 110 outputs data of the region for use in editing mails which is in the non-volatile memory 102b to a communication part 101, and the communication part 101 sends mail data to the mail server through a wireless link which was established previously (S610).

When the sending of the mail data is completed, the CPU 110 ~~finishes~~ terminates the ~~a~~ connection with the mail server and ~~finishes~~ ends communication by opening the established wireless link, and, for example, as shown in Fig. 7(6), displays ~~a display~~ ~~for~~an indication informing ~~a~~the user that the sending of the mail ~~was~~ has been completed on the sub display part 104.

In Fig. 7(6), the sub operation key 107a functions as a<u>n</u> "END" key, and the sub

operation key 107b functions as an "ADDRESS" key, and athe user selects whether or not the sending of a mail is to be carried out to a person who is different from the person designated previously, to whom athe mail iswas sent, or whether or not the E-mail mode is finished (S611).

When the address key 107b is depressed and a signal from the address key 107b is inputted to the CPU 110, the CPU 110 displays a screen for selecting a person to which when a mail is to be sent, as seen in of Fig. 7(4), on the sub display part 104 (S608), and carries out processes from the above-described steps S609 to S611.

On the one hand, when the end key 107ba is depressed and a signal from the end key 107ba is inputted to the CPU 110, the CPU 110 hascauses activation of the E-mail mode finished to end (S612), and carries out athe display of a still picture or a motion picture monitor which was taken in by the image pickup camera 109 (S601)(Fig. 7(1)).

As described above, since it is configured that a the mode is automatically transferred to the E-mail mode, after a still picture or a motion picture was shot in the state that in which the a portable telephone wasis closed, without taking the trouble to open athe portable telephone, it is possible to send a still picture of a motion picture which was taken to a person who one wants is, so that the usability is improved.

Also, since it was configured that, in the state that a in which the portable telephone wasis closed, without inputting characters, numeric characters and so on, but only by use of an operation for selecting a person to which a mail is to be sent, information of an image which was taken is sent with being attached as an attachment to athe mail, even in the case of the where there is a limited number of operation keys

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(sub operation key 107) on the back surface, <u>and so</u> it is possible to quickly send a mail by a simple operation.

Also, normally, in the state ~~that a~~ <u>in which the</u> portable telephone ~~was~~ <u>is</u> opened, since it is possible to make use of the main display part 103 which has a relatively large area and the main operation key<u>board</u> 106<u>,</u> which has a ~~plenty~~ <u>plurality</u> of operation keys, ~~outputted is~~ a display screen for inputting a destination <u>to which mail is</u> to be sent, a<u>the</u> subject matter, and a<u>the</u> text (characters, pictographic characters, numeric characters and so on)<u> of the mail are outputted</u>. Therefore, in this embodiment, ~~it is configured that,~~ <u>when the portable telephone is</u> in the opene<s>d</s> state, image information is sent to the main display part 103 by an E-mail function which use~~d~~<u>s</u> a display screen in which character inputting is available, and ~~it is configured that,~~ <u>when the portable telephone is</u> in the closed state, image information is sent to the sub display part 104 by use of a display screen having no character input. In addition, even <u>when the portable telephone is</u> in the opene<s>d</s> state, as shown in Fig. 7, it is also possible to send a mail with<u> the</u> transition of a display screen which prohibits the character input, and<u>,</u> in this case, for example, if ~~it is configured that~~ a user can select a mode by dividing a mode into<u>,</u> for example, a "NORMAL MODE" in which character inputting is available<s>,</s> and a "SIMPLIFIED MODE" in which character inputting is prohibited, <u>the</u> usability is better.

Also, in the above-described embodiments, taking operability and swiftness <u>of</u> <u>operation of the portable telephone</u> in the closed state into consideration, ~~described was~~ an example of sending only image information without inputting text information<u>,</u> such as characters, numeric characters and so on<u>, was considered</u>, but depending on the circumstances, there may be a ~~state that~~ <u>situation in which</u> one wants to send ~~any~~ text

together with image information. In this case, ~~it is~~ this can be realized by ~~such~~ actions ~~that~~in which a user prepares a given text (title, content of a text and so on)~~,~~ and has the text registered in advance.

And, ~~it is realized by configuring that,~~ after a destination to which a mail is sent ~~was~~has been determined in steps S609, the CPU 110 copies a text format (title, content of a~~the~~ text and so on) which was stored in the non-volatile memory 102b in advance to the region for use in editing mails, which was secured in the non-volatile memory 102b, to thereby complete the mail editing, and ~~it~~this is sent to the selected sending destination (S610). That is, ~~it~~this operation is realized by ~~configuring that a~~ sending text which was registered in advance ~~is sent~~to the selected sending destination.

~~By~~In this way, even ~~in case of~~when the portable telephone is in the closed state, it is possible to send a text of a format which was registered in advance only by ~~an~~ ~~operation for~~designating an address of a sending destination, and it becomes possible to send any text to a sending destination.

Also, it ~~may be configured~~is possible to have a user ~~selected~~ whether a text format is to be sent or not, or a text format which is sent out of a plurality of text formats. ————In this case, the CPU 110, for example, after a screen ~~of~~such as shown in Fig. 7(5) ~~was~~has been outputted, outputs a screen like that shown in Fig. 7(7), and a~~the~~ user selects a~~the~~ format of a~~the~~ text to be sent. Here, in case that "NO TEXT" ~~was~~is selected, the CPU 110 does not copy any text~~s~~ to the region for use in editing mails, and ~~processes so as~~proceeds to send only image information. Also, for example, as shown in Fig. 7(8), in case ~~that~~the text format "FORMAT 1" was selected, the CPU 110

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displays a~~the~~ content of the selected text format (format 1).

Next, when an input signal is inputted from the sub operation key 107a, which functions as the "RETURN" key in Fig. 7(8) ~~is inputted~~, the CPU 110 ~~processes so as~~ operates to return to ~~a~~the screen of Fig. 7(7). On ~~one~~the other hand, when an input signal is inputted from the sub operation key 107b which functions as a "SEND" key in Fig. 7(8) ~~is inputted~~, the selected text format is copied to the region for use in editing mails, which was secured in the non-volatile memory 102b, to ~~have~~cause the mail editing to be completed, and the mail is sent to the selected sending destination (S610, Fig. 7(6)).

~~By~~In this way, a user can select a text format in response to a person to which a mail is sent and information of an image which was taken, so that the usability is good.

Also, since the ~~it was configured that a~~content of ~~a~~the text is displayed prior to mail sending, a user can confirm ~~a~~in advance the content of ~~a~~the text to be actually sent ~~in advance~~, and, for example, it is possible to prevent ~~such~~a wrong operation ~~that~~in which a text format with a content which is different from that of a text format that one wants is selected. Also, if ~~tiles~~titles are included, it ~~may be configured~~is possible to ~~have~~display a list of the titles ~~displayed~~.

In addition, ~~here,~~if ~~it is configured that~~a user can register a plurality of text formats in the non-volatile memory 102 in advance, it is needless to say that the usability ~~is good~~will be improved.

Also, in the above-described embodiment, ~~described~~an example was considered ~~the case that~~in which information of an image which was taken by the image pickup camera 109 is simply attached to ~~a~~ mail without any change ~~of~~in the closed state of the

portable telephone and the mail is sent together with the image information, but ~~it~~the invention is not limited to this, and a mail which does not have image information attached ~~hereto~~ thereto may be sent.

In this case, for example, in a standby state, as shown in Fig. 5(1), ~~it may be configured that~~ activation processing of the E-mail mode can be carried out, and ~~it may be configured that,~~ the in processing which is carried out after this, processing from the above-described steps S607 to S612 (Figs. 7(4) to 7(6)) is carried out.

~~By~~In this way, for example, even in a case ~~that~~where an electric train on which ~~I get on board~~a person is riding is involved in ~~the~~an accident and there is a necessity for the person to quickly contact his/her ~~to a~~company and home, and so on, since it is possible to get in touch with a superior of ~~a~~the company, a member of the family and so on by sending ~~a~~mail having ~~such~~ a predetermined content, such as, for example, ~~that~~ "Please understand that I will be delayed because of an emergency situation. I will be in ~~tough~~touch with you again when ~~it goes into a state that~~ I ~~can~~am able to contact later." ~~In the~~This can be accomplished in a state ~~that a~~in which the portable telephone ~~was~~is closed, and by a simple operation, so that usability is improved~~good~~.

On ~~one~~the other hand, in the embodiments which were described so far, ~~described was the~~an example ~~that~~was considered in which mail sending is ~~completed~~ begun with the portable telephone in the closed state, but it is assumed that a portable telephone ~~goes into~~is changed to the open~~ed~~ state~~d in the~~ midstream of its operation. ——In this connection, an example of a technique for alerting the user to return the portable telephone to the closed state again~~, in case that a portable telephone went into the opened state in the midstream of operation for sending a mail in the closed state~~, at

the end of transmission will be described.

In this case, the CPU 110, if it confirms that it the portable telephone went into the opened state, with reference to the opened and closed state information which was detected by the fold detection part 108, during athe period of a mail sending operation, holds once the operations which were carried out by the sub operation key 107 so far, and displays on the main display part 103 an alert message of, for example, "A mMail is being prepared. Please close athe portable telephone.", and soon. After that, the CPU 110, if it recognizes that it went into the closed state, with reference to the opened and closed state information which was detected by the hold detection part 108, displays the display screen, which was displayed on the sub display part 104 right before athe portable telephone is was opened, on the sub display part 104 again, and processes proceeds so as to continuously carry out the operation.

ByIn this way, for example, in case that a use the user opened athe portable telephone unintentionally in the midstream of an operation for sending a mail while the portable telephone was in the closed state, and so on, since the alert message is displayed on the main display part 103, it is possible to urge athe user to close athe portable telephone and to continuously carry out the operation of mail sending.

In addition, as alert means, for example, to display a color for alerting the user (e.g., red color) on the main display part 103 or the sub display part 104, or to give alert by use of alert sounds, or to give alert by use of a combination of thean alert sound, characters and color information, may be carried out. Or, it may be configured possible to have a user selected a type of the alert sound and characters to be displayed.

Also, in the above-described embodiment, since there was such an assumption

that ~~an~~the operation of mail sending can not be carried out by the main operation ~~key 10~~ keys 106 in case ~~that it went into~~ the portable telephone was changed from the closed state to the ~~opened~~ state in midstream of the operation, ~~carried out was~~ and an alert was produced for returning the portable telephone to the closed state, ~~but if~~however, even in the ~~opened~~ state, if the operation of mail sending ~~can be~~ is carried out continuously by use of the ~~main~~ sub operation keys 107, the usability is good.

In this case, the CPU 110, if it confirms that ~~it went into the~~ the portable telephone was changed to the ~~opened~~ state, with reference to the ~~opened~~ and closed state information which was detected by the fold detection part 108, holds ~~once~~ the operations which were carried out by the sub operation key 107 so far, and displays on the main display part 103 the display screen which was displayed right before ~~a~~the portable telephone is opened. In this case, the CPU 110 ~~processes~~ operates in such a manner that the assignment of functions to the operation keys which are displayed at lower left and right ~~down~~sides of a display screen of the main display part 103 becomes the same as that of the sub display part 104. That is, processing is carried out in such a manner that a display as shown in Fig. 7 and so on is switched from the sub display part 104 to the main display part 103, and in each display screen, ~~ones~~ functions which were assigned to the sub operation keys 107a and 107b are assigned to the main operation keys 106a and 106b. Also, in case ~~that a~~ the portable telephone ~~was~~ is closed again, similar processing to the above-described processing is carried out.

~~By~~In this way, a common display screen is utilized in both of the closed state and the ~~opened~~ state, and ~~roles~~ the functions of the operation keys which were disposed on the front surface and ~~roles~~ the functions of the operation keys which were disposed on

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the back surface, for example, ~~a role~~the function of the main operation key 106a and a ~~role~~the function of the sub operation key 107a, ~~a role~~the function of the main operation key 106b and ~~a role~~the function of the sub operation key 107b, are made to be the same, and thereby, even if ~~a~~the portable telephone ~~went into~~was changed to the open~~ed~~ state in the midstream of an operation for sending ~~a~~ mail that was started with the portable telephone in the closed state, it is possible to continuously carry out ~~the~~ mail sending by a similar operation, so that the usability is good.

Next, an embodiment in which a text can be ~~inputted~~displayed by the main display part 103, which is of a relatively large size, and the main operation keyboard 106, which includes a ~~plenty~~plurality of operation keys, by opening ~~a~~the portable telephone after a person to whom ~~a~~ mail is to be sent was selected which the portable telephone was in the closed state, will be described.

In this case, for example, ~~in case that a~~if the portable telephone ~~was~~is opened after a sending destination ~~was~~has been selected on ~~a~~the screen, as shown in Fig. 7(4), the CPU 110 recognizes that ~~it went into~~the portable telephone was changed to the open~~ed~~ state, with reference to open~~ed~~ and closed state information which was detected by the fold detection part 108, and it displays on the main display part 103 an input screen wherein characters, numerical characters and so on can be inputted. And, ~~it is configured that a~~a user, by making use of the main operation keyboard 106, inputs characters and so on in this input screen~~, and can~~ to carry out the sending of ~~a~~ mail.

~~By~~In this way, for example, in case ~~that~~in which a user was thinking that he/she ~~will~~would send an email quickly ~~without any change of~~with the portable telephone in the closed state ~~once~~at first, but has changed his/her mind in midstream and ~~thought~~

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decides that he/she ~~also~~ ~~wanted~~s to input ~~also a~~ text and send it, since the input screen

for characters ~~and so on are~~ will be automatically displayed on the main display part

103~~, only~~ simply by opening ~~a~~the portable telephone, the usability is good. In this case,

"after a destination of mail sending was selected" was set as a condition, but it may be

configured to carry out similar processing even before a sending destination is selected.

In this case, ~~it may be configured~~ is possible simply to automatically activate a normal

mail function which is used in the opened state.

As described above, the mail sending function in the closed state was

~~described~~considered, but it is needless to say that ~~a~~the key layout, ~~a~~the display screen

and so on are not limited as described relative to this embodiment. Also, as to ~~a~~

~~structure~~ the operation of sending mail by use of a display screen with ~~not~~ no character

input, it is needless to say that it is applicable not only to a fold type portable telephone,

but also to other types of portable telephone.

Next, the processing which is carried out in case ~~that a~~ mail ~~was~~ is received ~~in a~~

~~state that a~~ while the portable telephone is in a ~~was~~ closed state will be described (third

embodiment)~~. H~~hereinafter with reference to the~~, it will be described by use of~~ a flow

chart of Fig. 8 and ~~a~~the example of the display screen ~~example of~~as shown in Fig. 9.

For example, in the standby state in which an idle screen as shown in Fig. 9(1) is

displayed (S801), when ~~a~~ mail is received from a mail server through a communication

network, such as a portable telephone network, and the communication part 101, the

CPU 110, in response to ~~which received~~ a mail reception signal, sends a mail data

download request signal to the mail server, and further, the mail server, which has

received the download request signal, sends mail data to ~~a~~the portable telephone

(S802). At this time, the CPU 110, which has received mail data, stores the mail data in a mail reserve region of the non-volatile memory 102b.

Further, at this time, the CPU 110 refers to ~~a~~the mail address of ~~a~~the sender from the mail data which is in the non-volatile memory 102b, and ~~refers to~~searches for a corresponding name ~~by searching~~ in the address book data which ~~are~~is stored in the non-volatile memory 102b by use of the ~~referred~~obtained mail address as a search key, and, for example, as shown in Fig. 9(2), ~~displays~~it produces a display for inquiring whether ~~a~~the name of the sender and ~~a~~the content of the received mail are ~~confirmed or not~~to be displayed on the sub display part 104 (S804).

In Fig. 9(2), the sub operation key 107a functions as a "No" key, and the sub operation key 107b functions as a "Yes" key.

————When a signal from this No key 107a is inputted to the CPU 110, the CPU 110 displays, for example, an idle screen, as shown in Fig. 9(1), on the sub display part 104 (S805). At this time, for the purpose of informing ~~a~~the user that there is mail data ~~which~~ whose content ~~is~~has not ~~confirmed~~been displayed, the CPU 110 may display an appropriate icon on the sub display part 104.

On ~~one~~the other hand, when a signal from the Yes key 107b is inputted to the CPU 110 (S805), the CPU 110 refers to the mail data which is in the non-volatile memory 102b, and displays a message, for example, as shown in Fig. 9(3), on the sub display part 104 (S806).

In Fig. 9(3), the sub operation key 107a functions as a "RETURN" key and the sub operation key 107b functions as an "IMAGE" key.

————When a signal from this "RETURN" key 107a is inputted to the CPU 110, the

CPU 110 displays, for example, an idle screen, as shown in Fig. 9(1), on the sub display part 104 (S807).

Also, when a signal from the ~~image~~ "IMAGE" key 107b is inputted to the CPU 110, the CPU 110 refers to image data of the mail data which is in the non-volatile memory 102b, ~~and~~ decode-processes the image data, and displays it, for example, as shown in Fig. 9(4), on the sub display part 104.

In Fig. 9(4), the sub operation key 107a functions as ~~the~~ a "RETURN" key, and the sub operation key 107b functions as a "STORAGE" key.

————When a signal from this "RETURN" key 107a is inputted to the CPU 110, the CPU 110 refers again to the mail data which is in the non-volatile memory 102b, and displays a message, for example, as shown in Fig. 9(3), on the sub display part 104 (S809).

Also, when a signal from the "STORAGE" key 107b to a folder is inputted to the CPU 110, the CPU 110 refers to image data of mail data which is in the non-volatile memory 102b, and copies it in an image reserve region which is in the non-volatile memory 102b (S810). At this time, for the purpose of informing a user that the storage of an image was completed, the CPU 110 may display, for example, a pop-up screen to this effect, as shown in Fig. 9(5), on the sub display part 104.

As described above, in the past, it was necessary ~~was an operation of taking~~ to take the trouble to open a portable telephone and ~~changing~~ change to the E-mail mode to ~~thereby~~ read athe content of a received email, but in this embodiment, by having a user select whether he/she desires to reads athe content of a email or not right after the email was received, the ~~suchlike~~ troublesome task of opening the portable telephone

can be omitted. Therefore, even when the portable telephone is in the closed state with limited operation keys being available, it is possible to read a mail the content email right after the reception thereof, quickly and by a simple operation, so that the usability is very good.

In addition, since such a case it can be assumed that a user is unaware that a mail was has been received can be assumed, itthe system may be configured such that a screen (Fig. 9(2)) for having a user select whether he/she will read athe content of a mail right after the mail was received is deleted after the lapse of predetermined time, and ita server is displayed indicating that there was reception of a mail. ByIn this way, it is possible to reduce vain unnecessary electric power consumption.

Also, itthe system may be configured such that, by opening athe portable telephone, after the screen for having a user select whether the user desires to reads a the content of a mail was has been displayed, a body the text of the mail is automatically displayed on the main display part 103. That is, it is possible to make such an arrangement that use the operation to open a portable telephone isas an indication of such an intention of a user that the user will read athe received mail. In this case, it may be configured that, in case that the opened state was is detected by the fold detection part 108, after the CPU 110 has activated the mail function, athe body text of a received email is automatically displayed.

Also, in the above-described embodiment, the case of receiving a mail with image information attached hereto thereto was describedconsidered, but itthe invention is not limited to this, and itthe system may be configured to receive a mail which does not have image information attached thereto.

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In this case, processing regarding attached image information attached, i.e., processes of S801 to S810, are to be omitted. In addition, Figs. 9(6) to 9(8) are show examples of display screens examples in that case. ByIn this way, even in a case that a mail with no image information attached was received, it is possible to read athe mail content right after reception in a state that a while the portable telephone was is in the closed state.

Next, a fourth embodiment will be described by use of a with reference to the flow chart of Fig. 10 and an example of a display screen example of Fig. 11. Here, such an example of this embodiment that, in will be described for a case that in which there was reception of a telephone in the state that acall while the portable telephone was in the closed state, aso that the user can start a receive the telephone call at ease, will be described.

Fig. 10(1) is a view showing an entire overall system which includeds a portable telephone (PORTABLE A) of a user A, a portable telephone (PORTABLE B) of a user B, and a switching machine C. Fig. 10(2) is a process flow chart showing the operations of PORTABLE A in this embodiment, and Fig. 10(3) is a process flow chart in an entire showing the operations of the overall system.

For example, in a standby state in which an idle screen as shown in Fig. 11(1) is displayed (S1001), the switching machine C, which has received (S1101) a calling signal that was sent from PORTABLE B, sends a ring signal for calling out establishing a call to PORTABLE A to from PORTABLLBE AB (S1102).

The CPU 110 of PORTABLE A, which received the ring signal, analyses athe telephone number and so on of PORTABLE B from the ring signal, and searches the

address book data which ~~was~~ is in the non-volatile memory 102b ~~by use of~~ using the telephone number as a search key, and it displays, for example, as shown in Fig. 11(2), name information which corresponds to the search key, on the sub display part 104, and informs ~~a~~the user that there is an incoming call (S1003). Here, in case ~~that~~ there is no name information which corresponds to the search key, in the address book data, the CPU 110 displays ~~a~~the telephone number of PORTABLE B.

In Fig. 11(2), the sub operation key 107a functions as a "MESSAGE" key, and the sub operation key 107b functions as a "CUT" key.

————When a signal from this "CUT"~~cut~~ key 107b is inputted to the CPU 110, CPU 110 sends a cut signal to the switching machine C through the communication part 101~~, and~~ to reject reception, and it then returns to the standby state (S1001)~~,~~ and displays, for example, an idle screen, as shown in Fig. 11(1), on the sub display part 104 (S1004).

Also, when a signal from the ~~message~~ "MESSAGE" key 107a is inputted to the CPU 110 (S1005), the CPU 110 sends a reception permission signal to the switching machine C through the communication part 101 (S1103), and connects a telephone call line (S1104). Next, the CPU 110 refers to response message data which was stored in the non-volatile memory 102b and sends a response message of, for example, "Since I will answer soon, please hang on for a while." ~~and so on~~ to PORTABLE B through the communication part 101 and the switching machine C (S1006) (S1105). At this time, in order to inform ~~a~~the user of ~~flowing~~ the sending of a response message ~~on~~to PORTABLE B, the CPU 110 displays, for example, a pop-up screen, to that effect, as shown in Fig. 11(3), on the sub display part 104 to hold ~~a~~the telephone call state (S1106).

~~At this time, for the purpose of informing a user of the middle of flowing a response message to a calling person, it may be configured to display, for example, a pop-up screen as shown in Fig. 11(4), on the main display part 103.~~

In Fig. 11(3), the sub operation key 107b functions as ~~the~~ a cut key. When a signal from this cut key 107b is inputted to the CPU 110, the CPU 110 sends a cut signal to the switching machine C through the communication part 101~~, and finishes~~ to end the telephone call and returns to the standby state, and it then displays, for example, an idle screen, as shown in Fig. 11(1), on the sub display part 104 (S1007).

After the response message was sent to PORTABLE B (S1006), PORTABLE A is opened, and when a telephone call start key (Fig. 11(4)) of the main operation key 106 is depressed, a telephone call start instruction signal from the telephone call start key is inputted to the CPU 110 (S1008)~~.~~ At this time, the CPU 110 stops sending ~~of~~ the response message and sends the telephone call start instruction signal (S1107), and, at the same time, it activates the microphone 111 and ~~a~~ the telephone call speaker 112, and switches from the telephone call state which was held in step S1006 to a state ~~that a~~ in which the telephone call is available (S1009) (S1108).

As described above, in case ~~that~~ an incoming telephone call ~~of a telephone was~~ is received ~~in the state that a~~ while the portable telephone is in the ~~was~~ closed state, a response message is ~~informed~~ sent to a calling terminal for now, and after that, without panic, with additional time, a user can start ~~a~~ the telephone call with ~~a~~ the calling person, so that the usability is good.

Also, since ~~a~~ the user can send a response message by a simple operation, such as depressing the sub operation key 107a (message key), it is possible to quickly

convey an intention to answer a telephone call to athe calling person, and athe calling

person can wait for the start of athe telephone call at ease.

In addition, in case that the time which has passed from the sending of a

response message to athe calling terminal until athe start of athe telephone call

exceeded a setting time (hereinafter, referred to as response elapsed time) which was

set in advance, an alert for starting athe telephone call may be applied communicated to

athe user. In this case, when a signal from the message key 107a is inputted to the

CPU 110 (S1005), the CPU 110 activates a timer function, and starts counting of the

elapsed time. After that, it refers to a setting time which was stored in advance in the

non-volatile memory 102b, and, in case that the elapsed time exceedsed the setting

time, the CPU 110 outputs a sound signal for alerting which was stored in advance in

the non-volatile memory 102a to the a music speaker 113 to alert the user. By In this

way, for example, even in the case that where a user is unaware that the user he/she

has pushed the message key 107a at the time of telephone call reception, since it is

possible to urge a user to start a telephone call by use of the alert means, such as an

alert sound and so on, it is possible to prevent athe calling person from being left in a

state that the calling person listened the response message as it isof having to wait for

an undesirable length of time.

In addition, the alert means is not limited to that considered in the above-

described embodiment, but, for example, characters or colors for providing an alert may

be displayed on the sub display part 104, and a user is urged to start athe telephone

call by a combination of alert sounds, characters and color information. Also, the

system, and it may be configured to haveallow a user to selected a type of alert sounds

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and display characters.

Also, in a portable telephone which has an answer phone function for sending a message to a calling person in case ~~that a~~ the called person can not answer the telephone call, ~~in case that~~ when a response ~~elapsed~~ time has exceeded the time for starting activation of the answer phone function (hereinafter, referred to as the answer phone setting time), the answer phone function is automatically activated, and, therefore, it is impossible to start ~~a~~ the telephone call. On that account, ~~it~~ the system may be configured to stop the answer phone function, in case ~~that~~ the message key 107a ~~was~~ is depressed.

In this case, when a signal from the message key 107a is inputted to the CPU 110 (S1005), the CPU 110 activates the timer function, and starts counting ~~of~~ the elapsed time. After that, the CPU 110 is designed to refers to the answer phone setting time, which was stored in advance in the non-volatile memory 102b, and not to carry out processing for sending an answer phone reproduction instruction signal for instructing reproduction of an answer ~~phone,~~ message to ~~a~~ the telephone communication line, for example, to an answer phone message service center, even if the response elapsed time has passed ~~over~~ the answer phone setting time.

~~By~~ In this way, even if the response elapsed time has passed ~~over~~ the answer phone setting time, the answer phone function is not activated, and, therefore, a user, without panic, can ~~opens~~ open the portable telephone, and can carry out an operation ~~of~~ for starting ~~a~~ the telephone call.

In addition, in the above-described embodiment, ~~it was configured that~~ the answer phone function itself is stopped in case ~~that~~ the response elapsed time has

passed ~~over~~ the answer phone ~~setting~~ time, but it may be configured to automatically extend the answer phone ~~setting~~ time.

In this case, when a signal from the message key 107a is inputted to the CPU 110 (S1005), the CPU 110 activates the timer ~~function,~~ function and starts counting ~~of~~the elapsed ~~time, and after.~~ After that, the CPU 110 ~~processes~~ proceeds to ~~change for~~ ~~extending~~ the answer phone ~~setting~~ time (e.g., 15 seconds) which was stored in advance in the non-volatile memory 102b ~~by~~to a predetermined preset value (e.g., 30 seconds).

~~By~~In this way, even if the response elapsed time has passed ~~over~~the answer phone ~~setting~~ time, since the answer phone function is not activated for a certain amount of time (here, 30 seconds), a user can open ~~a~~the portable telephone without ~~panic,~~ and ~~carry~~ies out an operation for starting ~~a~~the telephone call.

In addition, it is needless to say that ~~it~~the system may be configured such that the answer phone ~~setting~~ time and the extension preset value which was stored in the non-volatile memory 102b can be changed by a user.

The answer phone message service center, which has received ~~the~~a message reproduction instruction signal, sends a message signal to a calling terminal. The CPU of the calling terminal which received the message signal outputs the message signal to a telephone call speaker and so on, and informs ~~a~~the calling person of the message.

In addition, ~~in~~ the above-described ~~embodiment, it~~ was configured such that, after the message key 107a ~~was~~has been depressed, in the state ~~that a~~in which the portable telephone ~~was~~is opened, for example, as shown in Fig. 11(4), the telephone call start key ~~was~~ is depressed to start the telephone call (S1009), but since to depress

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the message key 107a is also an indication of ~~such~~ an intention that ~~a~~the user will answer the call later, to depress the telephone call start key again when the portable telephone is in the ~~opened~~ state becomes a ~~double~~ duplicate troublesome task.

———In this connection, ~~it~~the system may be configured such that, after the message key 107a ~~was~~ is depressed in the closed state, if ~~a~~the portable telephone is opened, ~~a~~the telephone call is automatically started.

~~In this case~~On the other hand, if ~~a~~the portable telephone is left in the ~~opened~~ state, the ~~opened~~ and closed state information which was stored in the volatile memory 102a is changed from the closed state "1" to the ~~opened~~ state "0", and the CPU 110 which ~~recognized~~ s that change, stops the sending of a response message, ~~and~~ activates the microphone 111 and the telephone call speaker 112, and carries out processing for restarting the telephone call state which was held in steps S1006.

~~By~~In this way, since ~~a troublesome task~~ the need for taking the trouble to depress the telephone call start key can be omitted, the usability is good.

Also, ~~it~~the system maybe configured such that the telephone communication network, for example, the switching machine sends ~~a~~the response message which was sent in step S1006. In this case, in the standby state (S1001) in which, an idle screen ~~as,~~ for example, as shown in Fig. 11(1), is displayed, the switching machine C, which received (S1201) a calling signal which was sent from PORTABLE B, sends a ring signal for calling ~~out PORTABLE A~~ to PORTABLE A (S1202).

The CPU 110 of PORTABLE A, which received the ring signal, analyses ~~a~~the telephone number and so on of PORTABLE B from the ring signal, ~~and~~ searches the address book data which ~~was~~ is stored in the non-volatile memory 102b ~~by use of~~ using

the telephone number as a search key, and displays, for example, as shown in Fig. 11(2), name information which corresponds to the search key, on the sub display part 104, and so as to informs a the user that there is an incoming call (S1003). Here, in case that there is no name information which corresponds to the search key, in the address book data, the CPU 110 displays a the telephone number of the PORTABLE B.

In Fig. 11(2), the sub operation key 107a functions as a "MESSAGE" key, and the sub operation key 107b functions as a "CUT" key.

———When a signal from this cut"CUT" key 107b is inputted to the CPU 110, CPU 110 sends a cut signal to the switching machine C through the communication part 101, and to reject reception, and it then returns to the standby state (S1001), and displays, for example, an idle screen, as shown in Fig. 11(1), on the sub display part 104 (S1004).

Also, when a signal from the message "MESSAGE" key 107a is inputted to the CPU 110 (S1005), the CPU 110 sends a response message start signal to the switching machine C through the communication part 101 (S1104)(S1203). Next, the switching machine C sends a response message of, for example, "Since I will answer soon, please hang on for awhile." and so on to PORTABLE B through the communication part 101 and the switching machine C (S1006) (S1204). At this time, in order to inform a the user of the sending of flowing a response message onto PORTABLE B, the CPU 110 displays, for example, a pop-up screen to that effect, as shown in Fig. 11(3), on the sub display part 104. At this time, communication may be or may not be established between PORTABLE A and PORTABLE B, but since a wireless resource is finite, the use efficiency of the wireless resource is better in case that communication is not established between PORTABLE A and PORTABLE B.

In Fig. 11(3), the sub operation key 107b functions as ~~the~~a cut key. When a signal from this cut key 107b is inputted to the CPU 110, the CPU 110 sends a cut signal to the switching machine C through the communication part 101~~, and finishes~~ to end the sending of the response message from the switching machine C to PORTABLE B, and PORTABLE A returns to the standby state, and it then displays, for example, an idle screen, as shown in Fig. 11(1), on the sub display part 104 (S1007).

After the response message start signal was sent to the switching machine C (S1203), PORTABLE A is opened, and when the telephone call start key (Fig. 11(4)) of the main operation key 106 is depressed, a telephone call start instruction signal from the telephone call start key is inputted to the CPU 110 (S1008)~~,~~. At this time, the CPU 110 sends the telephone call start instruction signal to the switching machine C (S1205), ~~and~~ establishes a communication connection with PORTABLE B (S1206), and, at the same time, it activates the microphone 111 and a telephone call speaker 112, and sets ~~to~~ a state ~~that~~ in which a telephone call is available (S1009)(S1207).

By the foregoing, since the switching machine is configured to send the response message, the burdens of a providing memory space and processing ~~of a~~ in the portable telephone ~~are~~ for this purpose is reduced.

As described above, mail reception and telephone call reception in the closed state was ~~described~~ considered, but it is needless to say that ~~a~~ the key layout, ~~a~~ the display screen and so on are not limited to those described with reference to this embodiment. Also, as to ~~a~~ the point that a message is displayed at the time of mail reception, and on the basis of that message, browsing of the mails ~~are~~ is inquired, and as to a point that, on the basis of a result of that inquiry, a body text of a mail is

automatically displayed, it is needless to say that ~~they~~ such features are applicable not only to a fold type portable telephone, but also to other types of portable telephone.

Also, in the embodiments which ~~were~~ have been described so far, as a method ~~for~~ of returning to a previous screen of the display screen which is being displayed on the sub display part 104, for example, the "RETURN" function was assigned to any one of the sub operation keys 107a and 107b, but ~~it~~ the system may be configured such that a "RETURN" exclusive use operation key is separately disposed at a place where it can be operated even in a case ~~of the state that a~~ where the portable telephone ~~was~~ is closed, and by depressing that key ~~in case that it was depressed~~, ~~it~~ the display returns to the previous screen.

Also, in the foregoing embodiments, as a display part, a liquid crystal panel ~~is~~ has been considered, but ~~it~~ the invention is not limited to this, and for example, ~~it may be a~~ the display part ~~which used~~ may consist of a light emitting device, such as an organic EL and so on.

Also, the invention is not limited to the embodiments which were ~~shown as~~ described above, and a principle and a new characteristic which were disclosed here include a broad range of a technical scope.

~~A)~~ As described above, according to this invention, ~~in a foldable~~ when the portable telephone is in the folded state, the usability in a folded state can be improved. In particular, it is possible to improve the usability at the time of camera operation.

Also, according to another aspect of the invention, it is possible to prevent a wrong operation of an operation key which ~~was~~ is formed on a back surface of the portable telephone.

Also, according to still another aspect of the invention, it is possible to prevent a malfunction of an operation key which ~~was~~ is formed on a back surface of the portable telephone.